



Project Inception Report

Developing an Innovation- Led Bioeconomy Strategy for Eastern Africa (BiSEA)

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TABLE OF CONTENT

TABLE OF CONTENT	1
1.0 THE BISEA PROJECT	2
2.0 BACKGROUND	2
2.1 BUILDING BIOECONOMIES IN EASTERN AFRICA	2
2.2 OVERVIEW OF THE BIOECONOMY ENVIRONMENT (BROADER OPERATING ENVIRONMENT) IN EASTERN AFRICA.....	4
2.3 BUILDING VISIONS AND STRATEGIES.....	7
2.4 CREATING A POLICY AGENDA AND AN ENABLING ENVIRONMENT.....	9
3.0 DEVELOPMENT OBJECTIVE	10
4.0 EXPECTED OUTCOMES	12
5.0 BENEFICIARIES	12
6.0 PROJECT METHODOLOGY AND PROCESS	13
6.1 A CONSULTATIVE PROCESS DRAFTING THE REGIONAL BIOECONOMY STRATEGY	13
6.2 THE REGIONAL STRATEGY DRAFTING COMMITTEE.....	13
6.3 PUTTING THE DRAFTING OF THE STRATEGY IN THE CENTER OF THE BISEA PROJECT.....	13
6.4 THE STRUCTURE OF THE DRAFTING PROCESS	13
6.5 LINKING THE STRATEGY DEVELOPMENT TO THE GLOBAL BIOECONOMY CONTEXT AND INTERNATIONAL EXPERIENCES.....	14
6.6 DATA AND KNOWLEDGE GATHERING AND SETTING UP A RAPID RESPONSE FUND.....	14
7.0 PROJECT ACTIVITIES AND OUTPUTS	15
7.1 ESTABLISHMENT OF BISEA PROJECT IMPLEMENTATION FRAMEWORK AND HOLDING INCEPTION MEETING	15
7.2 DEFINING THE STATUS/SITUATIONAL ANALYSIS OF THE BIOECONOMY IN THE REGION.....	16
7.3 IN DEPTH ASSESSMENTS AND EMPIRICAL STUDIES	16
7.4 DEVELOPING SCENARIOS AND SUGGESTION PATHWAYS FOR BIO-BASED GROWTH IN THE REGION.....	18
7.5 STAKEHOLDER CONSULTATIONS AND CONVENING.....	18
7.6 DRAFTING THE REGIONAL INNOVATION-LED BIO-ECONOMY STRATEGY	19
7.7 APPROVAL AND ADOPTION OF REGIONAL INNOVATION-LED BIO-ECONOMY STRATEGY TO EAC COUNCIL OF MINISTERS.....	19
7.8 PRODUCTION OF POLICY AND TECHNICAL BRIEFS AND OTHER PROJECT PUBLICATIONS.....	20
7.9 A REGIONAL BIOECONOMY FORUM.....	20
8.0 FLOW DIAGRAM AND DESCRIPTION OF THE DRAFTING PROCESS	22
9.0 INITIAL STAKEHOLDER ANALYSIS	23
10.0 OVERVIEW OF BIOECONOMY POLICIES & RELATED STRATEGIES IN THE REGION	23
11.0 PROPOSED STRUCTURE/ CONTENT OF THE BIOECONOMY STRATEGY	28
12.0 WORK PLAN (COMBINED GANTT CHART)	29
13.0 PROJECT MANAGEMENT AND COORDINATION	33
13.1 MANAGEMENT OF THE CONSORTIUM AND THE DRAFTING PROCESS	33
13.2 MONITORING, EVALUATION AND QUALITY ASSURANCE	33
13.3 THE DEVELOPMENT OF AN INTERNATIONAL PROJECT REFERENCE GROUP	33
13.4 COMMUNICATION STRATEGY	33
13.5 NATIONAL WORKING GROUPS AND THE REGIONAL DRAFTING TEAM	33
ANNEX I: PRELIMINARY STAKEHOLDER ANALYSIS	34

1.0 THE BiSEA PROJECT

The project “Developing an Innovation- Led Bioeconomy Strategy for Eastern Africa” (BiSEA) is supported by the BioInnovate Africa Programme (www.bioinnovate-africa.org).

The main objective of BiSEA is to **develop a regional innovation driven Bioeconomy strategy** shared by the countries in the Eastern Africa region. This will be done in close consultation with Science and Technology Councils/Commissions and relevant ministries and stakeholders in all six BioInnovate countries (Ethiopia, Burundi, Kenya, Rwanda, Tanzania and Uganda) and South Sudan.

The BiSEA project partners are:

1. East African Science and Technology Commission (EASTECO) - Rwanda
2. African Technology Policy Studies Network (ATPS) - Kenya
3. The Scinnovent Center - Kenya
4. Bio-Innovations (U) Ltd - Uganda
5. Stockholm Environment Institute (SEI) Africa Center - Kenya

2.0 BACKGROUND

2.1 BUILDING BIOECONOMIES IN EASTERN AFRICA

The Bioeconomy, can be defined in many ways, and in the recent communique from the Global Bioeconomy Summit, Berlin 2018, the Bioeconomy is defined as *the production, utilization and conservation of biological resources, including related knowledge, science, technology and innovation to provide information, products, processes and services in all economic sectors aiming towards a sustainable economy* (GBS, 2018) An economy where renewable biological resources are converted for socio-economic growth and development, responding to global challenges including poverty, hunger, access to affordable and clean energy, thereby promising environmental gain (Devaney & Henchion, 2017). As the eastern African region is endowed with a rich diversity of bio-resources coupled with suitable agro-ecologies, the socioeconomic focus for in an emerging eastern African Bioeconomy could be expanded from traditional agricultural initiatives to include value addition to a broad range of bio-resources, enabling scientific research and innovation to be a driver of economic growth and development (Virgin, 2016).

In eastern Africa, there is growing recognition that transition into middle-income nations, a key goal for many African countries, can be assisted through investment in and transformation into knowledge-based bio-economies. This is broadly captured by Professor Calestous Juma who argues in his book “*The New Harvest: Agricultural Innovation in Africa*” (Juma. 2011) that modern biosciences can do for Africa what Information Technology (IT) has done for India.

A key feature of the Bioeconomy is extending biomass production and processing beyond food, feed and fibre to include a range of value-added products with potential applications in many sectors, such as the agriculture, health and energy sectors. Bioeconomy driven innovation, not least the use of modern biosciences, could be an important driver for a future green and circular economic growth in the region, and can for instance be used to:

- Produce high value medical products, such as biopharmaceuticals, vaccines and health products, not let by adding value to traditional medicine/knowledge;
- Produce crops more tolerant to drought pests or poor soils, or that have specific characteristics such as improved nutritional value or desirable qualities for specific industrial uses;
- Produce green chemicals, new bio-based materials for industrial use and local bio refineries
- Produce different forms of bioenergy;
- Improve value addition using agro-processing systems in the region for high-quality food and agro-industrial products;

- Convert bio-waste to useful products, making more efficient use of resources and increasing value addition at agro-processing plants, bio-refineries etc.;
- Protect the environment and improve human health by treating potential toxic and harmful bio-waste and bioremediate toxic organic compounds and heavy metals including contaminated waters and soils;
- On a macroeconomic level, the development of modern Bioeconomies has the potential to
- Make countries more competitive internationally, not least in the industrial and agricultural sector, and more successfully than today integrate in the global economy;
- Enhance public health, food security and rural livelihoods;
- Create new jobs and livelihood opportunities; and
- Create a greener economy as countries in the region shift towards a low-carbon future.

For eastern Africa, ensuring food security will continue to be high on the development agenda. Smallholder farmers are the major producer of food in eastern Africa for the foreseeable future. Connecting these smallholders to markets, value chains and agro-processing opportunities is increasingly seen as one of the most important tools in elevating agricultural productivity, improving rural and livelihoods in the region.

The agro and biomass-processing sector in is in many Africa countries a vital part of the economy and also crucial for creating demand and value chain opportunities for African farmers. This sector however runs at a suboptimal level and produces large amounts of waste and severe environmental problems. Transforming the African agro-processing sector so that it effectively adds value to the primary production and convert waste to valuable products in an environmentally friendly manner will be a central tool in improving agricultural productivity in Africa. A more dynamic, resource efficient agro-processing sector is also important for creating new jobs and raising profitability for farmers and agribusinesses in the region.

In the Bioeconomy, innovation optimizing the use of biomass resources are central, where the entire innovation system, ranging from R&D, manufacturing, deployment, commercialization and large-scale use should be used to its full potential. In a time of resource scarcity, but also rapidly advancing biosciences and new market opportunities, it will also be increasingly important for countries in the region to support biomass production and utilization systems using a holistical approach that unlocks the full potential of biomass production, In such systems, high-value products are central, including food and feed, but also co-production of other products where possible, using all parts of the biomass resource in a productive and optimal manner.

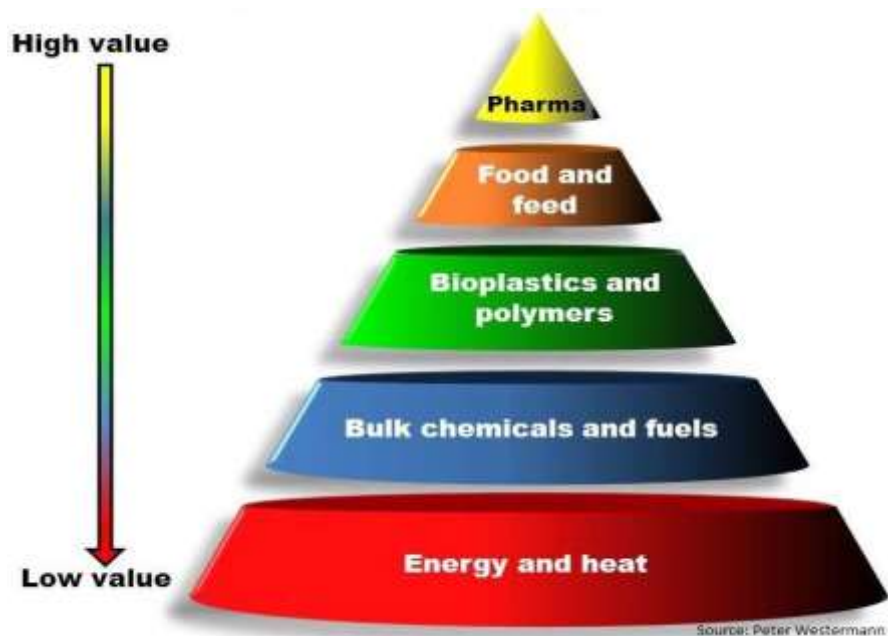


Figure 1: The biomass value pyramid visualizing the cascading principle

It is important to note that while the transition towards modern Bioeconomies is often associated with increased sustainability, there is a debate in scientific and public forums whether or not it will necessarily lead to a better, more sustainable future. Frequently mentioned problems are the competition between food and fuel production and the potential negative effects of land-use change (particularly deforestation for agriculture) and agricultural intensification (Pfau et al, 2014). It is clear that the development of Bioeconomies is not a silver bullet solution to food security, inclusive green growth, improved livelihoods and increased biomass productivity and cannot be considered as something self-evidently sustainable. Instead it needs to be designed, planned, regulated and supported in such a way that it effectively functions as a driver of sustainability in the development, use and reuse of bio-resources.

2.2 OVERVIEW OF THE BIOECONOMY ENVIRONMENT (BROADER OPERATING ENVIRONMENT) IN EASTERN AFRICA

The eastern African region boasts of an immense genetic biodiversity, with the potential to reap off the benefits of the Bioeconomy. While the Bioeconomy discourse has only taken centre stage in the last two decades, national developmental policies and strategies in the eastern African region have focused on the valorisation of biomass in different capacities and scopes. The presence and projected upward trend of bio economy development has been backed up by global and regional policies and strategies that are aimed at encouraging use of bio based products mostly in health, manufacturing, energy and agriculture. This new discourse and perspective allows for economies to rethink their strategies and sustainably align them towards global competitiveness, regional, national, and local growth and development.

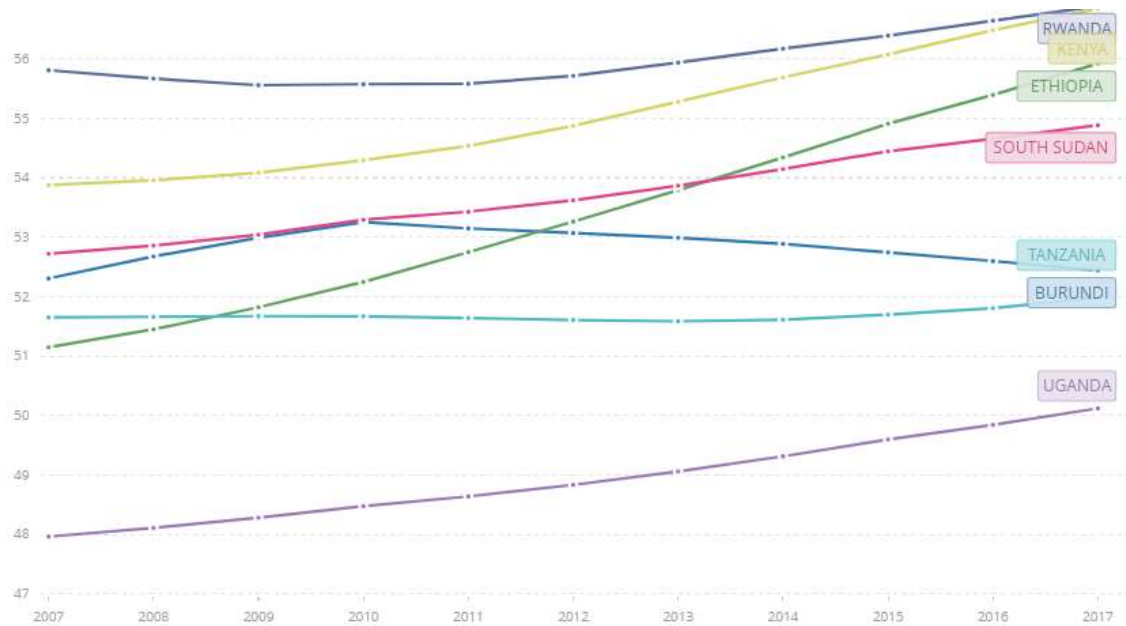


Figure 2: Increasing young population (15-64 years) from 2007-2017 in the eastern African countries

Demographical statistics of the eastern African region indicate one of a high demographic dividend and an increasing young population (c.f. Fig 1 and Table 1), with an average population growth rate of **2.81%** against 1.158% of the world and comparable to that of sub-Saharan Africa (excluding high income) of 2.7%. As a region with agriculture as its mainstay, this population growth increases demand for biomass and bio-based products, signalling a requirement for the development of diversified value-added products and eventually a robust strategy to accomplish a sustainable consumption and production of such products.

Table 1: Population and Demographic Statistics, Eastern African region

	Population (2017)	Population Growth rate (2017)	Population ages 15-64 (% of total) (2017)
Burundi	10,864,245.00	3.18	52.44
Ethiopia	104,957,438.00	2.46	55.92
Kenya	49,699,862.00	2.52	56.85
Rwanda	12,208,407.00	2.41	56.89
South Sudan	12,575,714.00	2.78	54.89
Tanzania	57,310,019.00	3.08	51.98
Uganda	42,862,958.00	3.26	50.12

The political environment in the region has been quite stable in the recent past, with the exception of South Sudan and Burundi, which have experienced protracted and perpetual crises, causing disruption of its governance structures and livelihoods. The political systems in the country are majorly either presidential or parliamentary, with Ethiopia having a Federal government and Tanzania having a Unitary system (Table 2).

Table 2: Current political systems (2018) in the eastern African countries

Burundi	A presidential , representative democratic republic, whereby the President of Burundi is both head of state and head of government, and of a multi-party system	The Republic of Burundi
Ethiopia	Federal parliamentary republic, whereby the Prime Minister is the head of government	Federal Democratic Republic of Ethiopia
Kenya	A presidential , representative democratic , republic, whereby the President of Kenya is both head of state and head of government, and of a multi-party system in accordance with a new constitution passed in 2010.	The Republic of Kenya
Rwanda	A presidential republic , whereby the President of Rwanda is both head of state and head of government, and of a multi-party system	The Republic of Rwanda.
South Sudan	A presidential, representative democratic consociationalist republic , where the President of Sudan is head of state, head of government and commander-in-chief of the Sudanese Armed Forces in a multi-party system.	The Republic of South Sudan
Tanzania	A unitary presidential democratic republic , whereby the President of Tanzania is both head of state and head of government, and of a multi-party system	The United Republic of Tanzania
Uganda	A presidential republic , in which the President of Uganda is both head of state and head of government. There is a multi-party system	The Republic of Uganda

This political environment supports a growing economy, with an average growth rate of **5.44%** as of 2017, with the Federal Democratic Republic of Ethiopia having the highest GDP growth rate of 10.25%, as well as the highest Africa Capacity Index as obtained from the Africa Capacity Report 2017¹ (Table 3). This growth rate has been quite steady in the last years (c.f. Fig 2). In light of the role of research and development in building a robust Bioeconomy, there is lack of adequate statistics on the national expenditure in research and development (GERD), with available statistics indicating an investment of an average of 0.467%, against 0.358%, average of the 25 sub-Saharan countries captured in the 2015 UNESCO Science Report².

Table 3: GDP and GERD figures across the eastern African region. Data from World Bank Data, Africa Capacity Report 2017, and UNESCO Science Report 2015

Country	GDP (current US\$) – 2017	GDP (annual %) - 2017	Growth Africa Index value	Capacity 2016	GERD as % GDP, 2011-
Burundi	3,172,416.15	0.50	53.4		0.12
Ethiopia	80,561,496.13	10.25	56.5		0.61 ⁺²
Kenya	79,263,075.75	4.87	55.2		0.79
Rwanda	9,135,454.44	6.06	68.2		
South Sudan	-	-			
Tanzania	52,090,321.00	7.10	68.8		0.38
Uganda	25,995,031.85	3.86	54.0		0.48 ⁻¹

-n/+n: data refer to n years before or after reference year

¹ [The African Capacity Building Foundation, 2015, Africa Capacity Report 20117, Building Capacity in Science, Technology and Innovation for Africa's Transformation](#)

² [UNESCO, 2015, UNESCO Science Report : towards 2030, Paris](#)



Figure 3: Mostly steady GDP growth (annual %) from 2006-2017) – World Bank national accounts data, and OECD National Accounts Data Files

Of the economic growth, the core bio-based industries (agriculture, forestry and fishing) accounted for a regional average of **30.826%** of the total GDP in 2017. This further illustrates that key biomass production areas are the mainstay of the region. Tanzania has the highest rain cover in percentage of land area of **51.58%**, while Kenya has the lowest (based on available statistics) of **7.82%** (Table 4).

Table 4: Contribution of Agriculture, Forestry and Fishing in the eastern African economies

	Agriculture, forestry, and fishing, value added (% of GDP) - 2017	Forest Cover (% of land area) – 2016
Burundi	-	10.93
Ethiopia	34.00	12.54
Kenya	34.64	7.82
Rwanda	30.96	19.73
South Sudan	-	-
Tanzania	30.13	51.58
Uganda	24.58	9.68

2.3 BUILDING VISIONS AND STRATEGIES

The development of future Bioeconomies in the region is challenging and governments/policymakers are faced with many questions, such as:

- How can countries in eastern Africa, with all their constraint, make the best out from their huge bio-resources, using new technologies and new market conditions?;
- What type of investments in, science and technology, bioscience innovation and natural resource management and production systems can best connect smallholders to markets, value chains and agro-processing opportunities?;

- How could the energy, health and manufacturing sector make use of new technologies opportunities for bio-based productions in an eastern African context, and how could such technologies support and add value to traditional medicine/knowledge?; and
- How to get there? How should these innovation and production systems be developed and supported? What specific investments are needed and how can capacity be built? What strategies and what policies need to be put in place? What type of innovation, entrepreneurship and financing models are needed?

It is now high time for countries in the region to apply more systematically bio-based knowledge for economic transformations that will respond to local development needs. This will require long term planning and prioritization, investment in human capacity, S&T infrastructures, entrepreneurial capacity, innovation structures and enabling policy environment. This in turn requires strong leadership, government commitments, Overseas Development Assistance (ODA), public-private partnerships and most importantly **long term visions, strategies and effective policy agendas**.

Governments around the world are now developing Bioeconomy strategies on how to take full advantage of the bioscience revolution and Bioeconomy development. Developing regional and national Bioeconomy strategies is therefore an important step in the process of moving towards modern Bioeconomies in the region. In Africa, only South Africa has a well-developed national Bioeconomy strategy. The proposed collaborative project responds to the lack of a common bio- economy strategy in eastern Africa with a view to developing a regional Bioeconomy strategy that in a holistic way, supports strategic interventions in health, agriculture, industry, environment, energy sectors in the region. The proposed collaborative project will also generate Bioeconomy strategies and policies at national levels.

The vision is for Eastern African Community's bio-economy to be a significant contributor to the region's economy in line with the African Union's Agenda 2063 for knowledge-based, innovation-led African economies. Furthermore, EASTECO's vision of contributing to a prosperous, competitive, secure and united East Africa through collaboration in science, technology and innovation (STI) will very much be complemented by the proposed project. The vision aims to achieve growth in STI and development of novel industries generating bio-based services, products and innovations that will translate into increased and more diverse value added agricultural production, new bio-based value chains, new start-up bio-based companies and an innovation driven growth of existing bio-based companies. On a macro-economic and developmental level, thriving eastern African bio economies has the potential to make the countries more competitive internationally (especially in the agro industrial sector); create more sustainable jobs; enhance food security; and create a greener economy as the countries shift towards bio-based low-carbon economies. This will lay a foundation for strong knowledge based Bioeconomy in the region.

The regional strategy will build upon the strong foundation laid by an East African regional Science, Technology and Innovation (STI) policy aimed at creating an enabling environment for increased STI investments supporting sustainable regional development and socio- economic transformation. The proposed regional Bioeconomy strategy will guide the development of national Bioeconomy strategies of the EAC partner states and Ethiopia. These strategies will provide a framework to guide biosciences R&D and innovation investments, as well as decision-making pathways as eastern African countries adapted to the realities of global transition to a low carbon economy. These strategies should also create an enabling environment for a wide range of role players including government departments, industries, venture capitalists, the academia, private sector entrepreneurs, practitioners in the agricultural, health, energy and in the bio-based sector, and the broader public. The strategies will also identify areas where public policy can lower barriers, create incentives, encourage innovation and improve cooperation between and among stakeholders. It will form the basis for pursuing Bioeconomy policies at national and regional levels.

2.4 CREATING A POLICY AGENDA AND AN ENABLING ENVIRONMENT

Effective bioscience and agro and biomass-processing and value chain innovation systems are central in a knowledge based Bioeconomy. An enabling environment and guiding policies are however needed for an innovation system to be functional. The innovation systems in participating countries (BioInnovate countries plus South Sudan) are to a large extent, influenced by, and dependent on, policies and regulations in a large number of policymaking areas, including science, technology and innovation (STI), agriculture, health, environment, climate, energy, industrial development and trade. Uncoordinated, incoherent and conflicting policies are stifling innovation in the region, and there is lack of functional mechanisms for a broader integrated policymaking process to harmonize and strengthen policies across sectors for concerted mobility towards agreed goals and targets.

The countries in the region also lack focused national goals, targets and specific government programs supporting innovation in the agricultural and agro-processing and emerging Bioeconomy sectors. An effective priority-setting regime, action plans and a clear roadmap for supporting bioscience innovation and developing a Bioeconomy, in consent with a broader and more integrated policymaking process would greatly assist countries in the region to move towards modern knowledge based Bioeconomies.

Startup companies and small businesses are often the pioneers and drivers of Bioeconomy innovation, however they need access to capital and markets. Policy and business stakeholders need to understand how these businesses can be better integrated in Bioeconomy value chains and how policy should support the development of level-playing fields for Bioeconomy innovators in the region.

A major gap in all participating countries (BioInnovate countries plus South Sudan) is the lack of policies supporting bio-based SMEs, and start-up companies, entrepreneurship in both the public and private sector, public-private partnerships and mechanisms to support linkages among innovation actors. Much remains to be done in introducing regulatory frameworks and providing government support to simplify entrepreneurial activities, the development of start-up companies and improving skills in the private sector. This would include increased support to business incubating platforms supporting innovation, development of small bio-based companies and private-public partnerships.

Countries in Eastern Africa have put significant effort into developing national science, technology and innovation STI policy frameworks. This includes new innovation agencies and innovation funding opportunities. These policies are, however, often general and poorly implemented. Well-implemented policies, functional incentives and guiding frameworks are needed for bioscience R&D to flow from the public R&D sector to the market. A major gap in the innovation systems and in STI policy frameworks across the region is a lack of policies supporting entrepreneurship in the public sector, private partnerships and mechanisms to support linkages among innovation actors. Policies designed to create demand for bioscience innovations are also absent.

Policies and incentives designed to create demand for bioscience innovations are also absent, such as polices on feed in tariffs for electricity generated from biogas/agro-processes, and on progressive environmental regulations. For the agro processing sector, high taxation rates on imported machinery and processing equipment is a negative factor. With the conversion of agro-industrial waste to bioenergy, unfavourable, unclear and poorly defined feed-in tariffs to sell electricity generated from biogas to national electricity grids is also a negative factor. This could be addressed by policies such as financial incentives for using renewable energy, which would stimulate biogas production and efforts to improve agro-processing efficiency, utilization of agro-waste and drive the use of industrial enzymes. Conversion of agro-industrial waste to bioenergy and the production of value added products such as industrial enzyme are also negatively affected by a lack of progressive environmental regulations. This

allows agro- processing industries to continue ‘business as usual’, discharging untreated waste into the environment.

The lack of progressive seed regulations, which would stimulate the development and innovation system for improved seeds cultivars and micro-propagated crops. As an improved quality standards for micro-propagated crops would provide a positive incentive and accelerated innovation in this area.

Policies and institution’s administrative routines are also important to support the flow of bio- science R&D from the public sector to the market. Generally, there is a lack of institutional structures and policies, including among Bio-Innovate R&D institutions, for technology transfer and innovation. This includes institutional IP policies, IP management expertise, and the capacity to develop effective contractual agreements, marketing skills, and the ability to establish links with market actors. There is also a lack of effective administrative routines for collaboration with partners from the private sector and from other countries. Slow procurement public procedures is also a problem for all R&D institutions in the region.

In conclusion, for Bioeconomy innovation and bioscience R&D to flow from the public sector to the market, governments in the region need to develop more effective and coordinated policies, incentives and guiding frameworks, which can steer and support innovation in key areas, Governments in the region therefore need take more action to implement effective regimes for priority setting, action plans and roadmaps and policy agendas for supporting bioscience innovation for the development of knowledge-based Bioeconomies. A first important step in this process is development of an eastern Africa regional Bioeconomy strategy that will provide a clear, shared vision for innovation driven Bioeconomy in eastern Africa.

3.0 DEVELOPMENT OBJECTIVE

The overall development objective of the proposed project is to develop, in close consultation with Science and Technology Councils and Commission and relevant ministries and stakeholders in all six BioInnovate countries, a regional innovation driven Bioeconomy strategy and a policy agenda shared by the countries in the eastern Africa region. A strategy and a policy agenda which can inspire and catalyze the development of national Bioeconomy strategies and subsequent policy development and interventions that are able to create new jobs and a sustainable bio-based and inclusive economic growth in the region.

The specific objectives are to:

- i. establish the status of the Bioeconomy in each of the participating countries through reviews of current Bioeconomy landscapes identifying key actors, their roles and relationships as well as assess policy options, gaps, and challenges for future bio-based economic growth in the region;
- ii. conduct in-depth assessments and empirical studies of strategic issues, components and factors enabling bio-based economic growth in eastern Africa;
- iii. carry out a highly consultative process of soliciting inputs from all stakeholders to identify strategic goals, approaches and actions for the region that will be integrated into a draft regional Bioeconomy strategy and policy agenda for eastern Africa and which can also catalyze and guide the development of national Bioeconomy strategies and policies;
- iv. develop 2 high quality policy briefs based on the status report on Bioeconomy in the region and policy that will support and inform the national and regional dialogues on the development of national and regional Bioeconomy strategies and policy;
- v. With the existing framework of BioInnovate Africa, organize regional and multidisciplinary Bioeconomy forum and platform for generating knowledge and insights that could assist countries to formulate and implement strategies and policies in support of Bioeconomy development; and

- vi. Seek approval and adoption of the regional Bioeconomy strategy by the relevant organs of the East African Community.

4.0 EXPECTED OUTCOMES

The outcomes of the project will be:

- i. Increased knowledge and awareness about the state of bio-economy issues, landscape and development in eastern Africa, and that
- ii. EAC Governance Bodies approve an innovation-driven Bioeconomy strategy for Eastern Africa.

5.0 BENEFICIARIES

Well-established Bioeconomy visions, strategies and policy agendas are crucial for creating an enabling policy, business and regulatory environment necessary to propel the development of knowledge-based Bioeconomies in the region with a positive impact on larger parts of society. The direct and indirect beneficiaries from this project will include researchers, policymakers, and practitioners from eastern Africa who shall co-own the Bioeconomy strategy and have the opportunity to implement it. Specifically, the beneficiaries of this project shall include:

- Governments in the participating countries at the national and regional levels in eastern Africa will be able to have a draft Bioeconomy strategy to adopt and domesticate at national levels. In addition, the economies will benefit from optimal use of national resources, knowledge generation and new bio-based products;
- Producers of biomass and biomaterials. These include smallholder farmers, and agro- processors working along the Bioeconomy value chain who will benefit from an improved connection to increased markets and business opportunities that will improve their productivity and result in wellbeing for the region. The regional strategy is expected to lead to reduced postharvest food losses due to the increased opportunities for agro- processing and value addition;
- Researchers/analysts at the national Commissions/Councils for science, technology and innovations in the EAC countries and Ethiopia, research institutions in the participating countries and at EASTECO will benefit from an enabling environment for innovation development;
- Private sector (both the formal and informal) working in bio-based enterprises will benefit from an enabling environment to operate their businesses and the wider private sector from the diversification introduced through new bio-based products and increased competitiveness of high value products with the use of bio-based technologies;
- The general public in the region is expected to benefit through reduction of the carbon footprints, increased revenue and new employment and livelihood opportunities, enhanced food security and healthcare, new waste treatment models including biodiversity protection, climate change adaption and mitigation, improved resource utilization;
- Academic Institutions, and other STI intermediaries involved in building capacity and infrastructure to optimize Bioeconomy output and to develop value chains for the bio- based industries who will be assisted in developing appropriate curricula and enhanced collaboration with the public and private sector for improved generation of knowledge and Bioeconomy innovations(the strategy will spell out collaborative arrangements);
- Potential social, business, and venture capital investors will with a greater clarity on strategic priorities and opportunities also be more able to identify their priority areas for potential engagement; and,
- Consumers, will benefit from more diverse bio-resource value addition chains, generating new health products, affordable medicines, greater diversity of food and consumer products including new nutritional food products and modern affordable bioenergy services. Agro-food waste conversion and recycling will eventually lead to sustainable consumption patterns.

6.0 PROJECT METHODOLOGY AND PROCESS

Our project will adopt mixed methods and process in order to achieve each specific objective stated above.

6.1 A CONSULTATIVE PROCESS DRAFTING THE REGIONAL BIOECONOMY STRATEGY

The process of drafting the Regional Bioeconomy Strategy will be highly consultative, involving Science and Technology Councils and Commission and relevant ministries and stakeholders in all six BioInnovate countries. The priorities, key components and deliberations in the draft strategy will be result of a consultative process, where directions, advice, input and guidance will come from a broad set of stakeholders, including government and policy bodies, industrial and commercial, academic and civil society organizations in the region.

Stakeholder engagement will include surveys, roundtables, discussion groups, personal consultations and workshops. Local institutions, including academia and research institutions will be engaged in fact finding, data gathering and knowledge generation in support of drafting work. EASTECO will organize a team of experts drafting a regional Bioeconomy strategy. We shall ensure that National Commissions/Councils for Science and Technology and their line ministries in the participating countries are actively involved in the project to ensure proper ownership.

6.2 THE REGIONAL STRATEGY DRAFTING COMMITTEE

To ensure country and local ownership of the strategy development process we propose the setting up of a Regional Strategy Drafting Committee, with representation from all BioInnovate program countries. The selection of a majority of the members in this Drafting Committee will be decided on a country basis, through national S&T councils and other government structures. The Drafting Committee will consist of 10 persons, six persons, one per country, selected through the National Commissions for Science and Technology and Ministries responsible for STI, 3 independent experts selected through the BiSEA project, and a person from EASTECO leading chairing the Drafting Committee. This Drafting Committee will be fully backed up by the BiSEA project team acting as a secretariat to the Committee, writing parts of the strategy on the basis of Drafting Committee guidance, providing background analysis, assessments, scenarios and suggestions on strategy structure, strategy directions, and potential tensions/conflicts that need to be addressed and deliberated on by the Drafting Committee. A zero draft will be developed by the BiSEA project team before the drafting group is engaged. The idea of constituting and engaging this group is to ensure that the whole writing project is co-owned by the BioInnovate countries.

6.3 PUTTING THE DRAFTING OF THE STRATEGY IN THE CENTER OF THE BISEA PROJECT

The Drafting of a regional Bioeconomy strategy is the central activity in the BiSEA project. The drafting process will be complex, and the Drafting Committee will need a lot of data, assessment and facts supporting the drafting process. They will also need input from all six BioInnovate countries on how bioeconomies in the region could be developed and look like (e.g. national Bioeconomy visions, R&D priorities etc). The BiSEA project will make sure that all activities by the BiSEA team has a direct and clear link into the drafting process. The data gathering, empirical work (studies, assessments, scenarios etc) will therefore be aligned to and developed in a demand driven fashion feeding in to and propelling the drafting work forward.

6.4 THE STRUCTURE OF THE DRAFTING PROCESS

The drafting process will be structured roughly as below:

- i. Gathering a BiSEA project inception meeting. During this meeting, the Regional Strategy Drafting Committee will be formed. The meeting will also discuss and suggest a scope, the framing of and key components of the regional strategy, including discussing goals, mission and objectives of such a strategy. International expertise, including expertise from South Africa will be invited and present their experiences and recommendations for the strategy work;

- ii. The development of a comprehensive stakeholder analysis for the region, done on a national basis by the National Working Groups guided by the BiSEA team. The analysis will identify and connect key actors in the region which are important to include in the various consultations which are to be done in the project. This stakeholder analysis is also the basis for the development of a the BioInnovate dialogue Fora;
- iii. Framing and preparing for the national consultations. The BiSEA team will develop and provide background material supporting the national consultations. This will also include scenario /foresight work to be done in these national consultations;
- iv. First in-depth country consultations, guided by the above framework, on country priorities and key components and strategic directions for a regional Bioeconomy strategy. The Science and Technology Councils and Commissions in each of the countries will organize local meetings, workshops and consultations and compile the country input for the Regional Drafting Committee. These national consultations will be guided by the BiSEA project background material, including scenario and foresight analysis. These consultations will also be guided by a stakeholder analysis organized by the BiSEA project;
- v. Developing the first version of the regional Bioeconomy strategy. The Regional Drafting Committee to develop a first version of the regional Bioeconomy strategy on the basis of the above country input. The work will be aided by the BiSEA project team supporting the Drafting Committee with quality data, knowledge and assessment based on the needs of the Drafting Committee;
- vi. Second in-depth country consultations. The first version of the regional Bioeconomy strategy developed by the Drafting Committee and the BiSEA team will be circulated and presented at national and regional level. The project team will in collaboration with The Science and Technology Councils and Commissions in each of the countries, organize consultations with all relevant key stakeholders in the region;
- vii. Second version of the regional Bioeconomy strategy. The Regional Drafting Committee to develop a second draft version of the regional Bioeconomy strategy on the basis of the above country input;
- viii. Final high-level consultation. The second version of the regional Bioeconomy strategy developed by the Drafting Committee presented to selected government institutions in the BioInnovate countries and at a regional level with a focus on the EAC; and,
- ix. Final version of the regional Bioeconomy strategy. The Regional Drafting Committee to develop a final version of the regional Bioeconomy strategy on the basis of the above input.

6.5 LINKING THE STRATEGY DEVELOPMENT TO THE GLOBAL BIOECONOMY CONTEXT AND INTERNATIONAL EXPERIENCES

The drafting process will be supported by analysis of Bioeconomy strategy development process in other parts of the world. This will be done through desk studies, but also through interacting directly with international expertise on challenges, failings and successes on the implementation of Bioeconomy strategies in selected countries. A direct link will be made to Department of Science and Technology in South Africa coordinating the development and implementation of the South African Bioeconomy strategy. The project will also use and actively participate in the Global Bioeconomy Summit Platform which is leading discussions and dialogues on Bioeconomy Development at the global level. The aim will be to support BioInnovate to actively participate, possibly organizing an Africa session at the Bioeconomy Summit in Berlin 2020.

6.6 DATA AND KNOWLEDGE GATHERING AND SETTING UP A RAPID RESPONSE FUND

The aim of the project is to support the regional Drafting Committee with high quality data and knowledge. The project will use desk studies, but also data gathering missions and consultations with government agencies, private sector actors. The project will engage with academic institutions in the region and support students to do large parts of the empirical work and fact finding. Knowledge will also be created through

close consultations with government institutions, practitioners and relevant stakeholders, through a co-creation of knowledge process. The data and knowledge gathering will be largely demand driven, through the needs of the Regional Drafting Committee and identification of data gaps in the consultation process.

Some of the studies and assessment that is necessary for the driving drafting process is described below in Section 7. However, it is not possible, at this stage, to design and budget for all the necessary data and knowledge gathering efforts and empirical work that will be needed to support the drafting of the regional strategy. Many of these studies need to be well thought out, carefully planned and closely linked to the strategy drafting process. It is therefore suggested that the project develop a contingency fund rapid response fund that can be used to fund studies and empirical studies when needed in the drafting process. It is suggested that EASTECO manage this fund.

7.0 PROJECT ACTIVITIES AND OUTPUTS

7.1 ESTABLISHMENT OF BISEA PROJECT IMPLEMENTATION FRAMEWORK AND HOLDING INCEPTION MEETING

Including the establishment of a project management structure. The project management structure will include the Regional Drafting Committee, National working groups, project team members and other collaborating partners in each participating country. Project teams/persons in each of the participating countries shall be engaged by the national commissions/councils for STI to form national working groups that will manage activities relating to national data collection, stakeholder mapping and engagements.

In all participating countries the National Commissions for Science and Technology and Ministries responsible for STI will take the lead and coordinate the national working group at National level to coordinate key national institutions during the development of the regional strategy implementation. They will i) identify and coordinate the national project teams who will be engaged in the development of the regional strategy and policy agendas; ii) be involved in data gathering at the national level; (iii) support stakeholders consultation and engagement; (iv) be involved in implementation of actions leading to an innovation driven Bioeconomy and assessment for opportunities for its development; v) contribute to the regional strategy based on their national Bioeconomy aspirations. The priorities, key components and deliberations in the draft regional strategy will therefore be result of a consultative process, where directions, advice, input and guidance will come from a broad set of stakeholders, including government and policy bodies, industrial and commercial, academic and civil society organizations in the region.

A National Working Group (NWG) will be established in each country to work with the project team and resource persons/consultants in the implementation of all project activities especially in designing and conducting empirical studies. The national working groups will include, senior Government experts in the field of Bioeconomy, research experts, policy development experts, STI experts, decision makers and private sector actors in the participating countries. The National Working group will be coordinated by National Commissions/ Councils for Science and Technology in each participating country.

Once the implementation framework is in place, the project team will hold an inception meeting to gather project partners and introduce the project to key stakeholders, discussing project methodology. Experts from South Africa and Europe will also be invited to share experiences and insights on how strategies were developed and implemented in their countries. The project will also invite BioInnovate Africa PAC to share their experience and guidance towards the implementation of this project.

Outputs

- National Working Groups (NWGs) coordinated by National Commissions/Councils for Science and Technology constituted in each participating country;

- A Regional Strategy Drafting Committee constituted; and,
- Inception meeting report.

7.2 DEFINING THE STATUS/SITUATIONAL ANALYSIS OF THE BIOECONOMY IN THE REGION.

In collaboration with the NWGs we will establish the status of the Bioeconomy in each of the participating countries through a broad review of current Bioeconomy landscapes in the region. These studies will be designed by the BiSEA team, in collaboration with the NWGs and carried out by BiSEA team, local resource persons/consultant and possibly including student and academia. The project team and national working groups will develop the terms of reference for these consultancy studies and reporting format.

Key components of this situational analysis will include:

- An assessment of Bioeconomy related policies and regulatory frameworks. desk studies will be carried out on relevant grey literature including policy documents from the participating countries, regional policies, economic reports, relevant value chain reports and data among others with a view to understand the policy statuses, what works and what does not and why. This assessment will also analyse the links with the strategy to the broader development framework in the region, including EAC Vision 2050, AU Agenda 2063 and the SDGs;
- A comprehensive stakeholder analysis in each of the participating countries, identifying key stakeholders and actors in the Bioeconomy sector, and where possible, including them in the consultative dialogue forming regional and national Bioeconomy strategies. This task will be led by the BiSEA team in collaboration with the NWGs and the National Commissions/Councils for Science and Technology;
- Identification and assessment of current governance structures, projects, initiatives etc. driving the current developments towards a modern Bioeconomy in the region; and,
- A review of the broader operating environment (environmental scanning), taking into account factors such as the economy key assets and stakeholder landscape and to collect statistical, demographic information and projections.

Outputs

- A report/on Bioeconomy related policies, regulatory framework, governance structure, government and other initiatives in the region to be directly integrated into the strategy, and
- A comprehensive stakeholder analysis report and process for the region

7.3 IN DEPTH ASSESSMENTS AND EMPIRICAL STUDIES

In-depth assessment and empirical studies of strategic issues, components and factors enabling bio-based economic growth in eastern Africa. This includes broad assessments of opportunities, drivers, gaps, challenges, major strategic issues, threats, opportunities and constraints to a sustainable Bioeconomy for future bio-based economic growth in the region.

These assessments will be based on empirical work, fact finding and data generation and involve a set of commissioned studies. These studies will be done by the BiSEA team in local resource persons/consultants including students in collaboration with National Working Groups and other relevant stakeholders through participatory methods including national and regional workshops, focus groups.

These empirical studies will be designed in a way to generate data that will provide the evidence necessary for formulating a regional innovation-driven Bioeconomy strategy for Eastern Africa. Thus, to a large extent, many of these studies and the empirical work will be a result of specific demand by the regional drafting

committee commissioning data gathering, gap analysis or specific synthesis reports. This to a large extent the work here will be demand driven feeding in the drafting process.

Key components of this activity are:

- Assessment of growth potential of specific Bioeconomy markets, and studies on the potential of a bio-based economy to support rural livelihoods, generate jobs, economic growth, and local, regional and international trade. This will include draft suggestions on how the development of a bio-based economy in the region can address social, economic and environmental constraints, strategic priority areas/sectors for interventions and support;
- Identification of key factors for the creation of an enabling environment in support of a bio-based economy, assessing major structural, economic or policy barriers and disincentives and corresponding areas. This will include potential and the ability for the private sector and bio-based SMEs to grow, including the possibility to industrialize the Bioeconomy in East Africa Assessment of capacity building needs and suggestions for investment priorities for supporting regional and national Bioeconomy strategies;
- A Strategic Environmental assessments (SEA) of Bioeconomy visions, strategies and policy agendas for bio-based growth at national and regional levels;
- A report on assessment of policy coherence and areas where policies/interventions in support of a bio-based economy; and
- Benchmarking and lesson learned from other Bioeconomy strategies throughout the world comparing Bioeconomy strategies and the opportunities and challenges ahead in other parts of the world (Europe, USA China, Latin America South and South-East Asia) will also be done here. The benchmarking assessment will use criteria selected within the team. In order to get a deep knowledge of global Bioeconomy initiatives, the team will consult with international experts on Bioeconomy. The project will network and engage with international organizations working on Bioeconomy such as: The Global Bioeconomy Forum, the BIOAfrica Convention, AfricaBio, Technology Innovation Agency of South Africa (TIA), Council for Scientific and Industrial Research South Africa (CSIR) Biosciences Division, The European Commission, Economic Commission for Latin America and the Caribbean (CEPAL) and Food and Agriculture Organization (FAO).

Outputs

- A compilation of report of Bioeconomy strategies and the opportunities and challenges in other parts of the world and a subsequent short report on relevant international experiences for eastern Africa in the development of and implementing strategies for bio-based growth;
- A report of the economic potential of specific Bioeconomy markets with strategic priority areas/sectors for interventions and support for the development of a bio-based strategy in the region which addresses social, economic and environmental issues;
- A capacity needs assessment report and proposals for investment priorities for supporting the regional Bioeconomy strategy;
- A report identifying key factors for the creation of an enabling environment in support of a bio-based economy;
- A Strategic Environmental assessments (SEA) of Bioeconomy visions, strategies and policy agendas for bio-based growth at national and regional levels;
- A report on assessment of policy coherence and areas where policies/interventions in support of a bio-based economy; and,
- Blogs on selected parts of studies with a relevance for the drafting process and for informing BiSEA project stakeholders on key issues in the drafting process.

7.4 DEVELOPING SCENARIOS AND SUGGESTION PATHWAYS FOR BIO-BASED GROWTH IN THE REGION.

In collaboration with the national working groups and the BISEA project team, will design the tools and apply foresight studies and scenarios building in STI and Bioeconomy development to (a) determine some of the key opportunities for bio-based economic growth and the future Bioeconomy pathways needs) of the eastern African economies, (b) innovation Bioeconomy R&D priorities to guide government investments in STI, and (c) benchmark existing capacities against future requirements to guide Bioeconomy development strategies in the region. These three areas will be important pillars of the regional bio-economy strategy. It is premised on the fact that foresighting and scenario building methodologies are increasingly recognised worldwide as a powerful instrument for establishing common views on future development strategies among policy-making bodies. STI foresight studies particularly provide inputs for the formulation of STI policies and strategies that guide the prioritisation of investments (including R&D investments). This will be done iteratively through national and regional stakeholder consultative workshops.

Outputs

- Scenario exercises at national basis on future potential, opportunities for bio-based economic growth in the region;
- Report on future potential, opportunities for bio-based economic growth and Bioeconomy pathways in the six Bio-Innovate countries; and
- A report on Bioeconomy R&D priorities and existing capacities against future requirements to guide Bioeconomy development strategies in the region.

7.5 STAKEHOLDER CONSULTATIONS AND CONVENING.

The project team shall undertake stakeholder consultations in each of the participating countries in collaboration with the National working groups. National and Regional level meetings, workshops and consultations will be conducted to obtain stakeholder views, concerns and other input into the regional strategy. The national working groups will be responsible for assisting the project team and resource persons/consultants in data gathering, setting up stakeholders meetings and data analysis. The project shall ensure that National Commissions for Science and Technology and their line ministries in the participating countries are actively involved in the project to ensure proper ownership. The National Bioeconomy consultation workshops will piggyback on other EASTECO national and regional activities to effectively utilize project funds. Whenever EASTECO is holding any activity in the partner states, the Bioeconomy national working groups will be involved to gather data for the empirical studies to inform the drafting of the strategy. EASTECO will thus ensure wide consultations within the bioinnovate countries include all the EAC partner states and across the region including Ethiopia. Consultations will also be made with EAC organ institutions and other regional and international organizations on the substance of the strategy.

The draft Bioeconomy visions & strategies will be reviewed and validated through national and regional consultative meetings. On-line consultations and presentations in specific fora (such as parliamentary commissions, regional meetings/fora) will be done to ensure a broad consultation and dialogue process. Specific focus will be made to consult with key policy making actors in the region (key parliamentary committees, private sector actors, key agencies etc.).

The team shall ensure that, the consultation processes are transparent, reasonably inclusive and will be given good visibility at both national and regional level.

The BiSEA team will develop a selection of background information material, and a basic package of information for the national consultations: this will be a compilation of reports briefs that can be presented during the consultations to frame and give context to these meetings. A larger part of their material will be

already published material but carefully selected to give a broad overview of and background to the strategy drafting process.

The BioInnovate Africa Project Advisory Committee (PAC) will be invited to attend the inception workshop and other regional consultation workshops. This will allow the PAC to learn about activities and processes relating to the development of the strategy, providing technical guidance to the development of the strategy and communicate or share project information with the consortium related to the implementation of this project.

In response of comments and suggestions from the above consultation process, final drafts of regional Bioeconomy visions/strategy will be developed, including a monitoring and evaluation plan for the Regional strategy implementation.

Outputs

- A selection of background information material, and a basic package of information developed for the national consultations;
- The consultation process with stakeholders will result in provision of views, data, foster consolidated country inputs into the drafting process fostering ownership; and,
- Proceedings of each participatory event conducted within the project.

7.6 DRAFTING THE REGIONAL INNOVATION-LED BIO-ECONOMY STRATEGY

From the analysis and consultation process a draft a regional innovation-led Bioeconomy strategy will be produced with strategic objectives, pillars, communication and outreach plan, and monitoring and evaluation plan. In drafting the strategy, input from all county consultations and relevant recommendations from various international fora and organisation will be taken into consideration. Strategic environmental assessment will be conducted for the proposed Bioeconomy strategy for eastern Africa to ensure its sustainability (including development of a tool for monitoring the impact of the Bioeconomy to the region's sustainable development).

The strategy will also be accompanied by a proposed policy development agenda and recommendations and road maps for key interventions to be done in short and medium terms. Recommendations, road maps and action plans on the governance and implementation arrangements will be produced for the regional Bioeconomy strategy. The final outputs (a regional vision, strategy and policy agendas) will be widely published and disseminated in the region. Presentation of these may also be done in larger appropriate regional meetings, BioInnovate Africa regional events or at future African Bioeconomy summits.

Care will be taken to ensure that the regional vision, strategy and policy agenda are of true regional relevance, context specific, components, opportunities, challenges etc that are relevant for all six BioInnovate countries. The project team will ensure that the strategy is anchored on broader development framework in the region, including the EAC Vision2050. The draft strategy will be discussed with national working groups after which, it will be reviewed by independent experts. A final regional validation workshop will be held.

Outputs

- Regionally validated Eastern African regional innovation-driven Bioeconomy strategy developed and presented, and
- A final version of a regional Bioeconomy strategy presented nationally and regionally.

7.7 APPROVAL AND ADOPTION OF REGIONAL INNOVATION-LED BIO-ECONOMY STRATEGY TO EAC COUNCIL OF MINISTERS.

The regional innovation-led Bioeconomy strategy shall be submitted for approval and adoption to EAC Council of Ministers to be implemented in the EAC partner states and to guide national level strategies and policy action. Through EASTECO and EAC Secretariat, submit the validated Regional innovation-led Bio-economy strategy draft to EASTECO Governing Board, Sectoral Council of Education, Science and Technology and culture and finally to the EAC Council of Ministers and Summit for approval so that its implemented in the EAC partner states and guide national level strategies and policy action to ensure local and regional ownership. The Team will conduct official launch of the Regional strategy in EAC countries and Ethiopia.

Outputs

- Final version of regional innovation-led Bioeconomy strategy adoption and approved by EASTECO Governing Board, EAC Sectoral Council of Science and technology and Council of Ministers.

7.8 PRODUCTION OF POLICY AND TECHNICAL BRIEFS AND OTHER PROJECT PUBLICATIONS.

The project team will produce at least 2 high quality policy briefs and a number of short technical briefs for influencing the mainstreaming of the Bioeconomy strategies and policies into national and regional development processes. We shall synthesize information, data, and reports from all the project activities including policy reviews and analyses, consultation processes, foresight studies and scenarios building, impact assessments, and workshops to develop these briefs. Communication materials for influencing supporting consultations and Bioeconomy strategy development and policy agendas at the national and regional levels as well as creating awareness of the BioInnovate supported Bioeconomy strategy development. The project will develop BiSEA communication plan, in close consultation with the Bio-Innovate Africa Secretariat.

Outputs

- A BiSEA communication plan, developed in close consultation with the Bio- Innovate Secretariat;
- Technical reports and briefs, working papers and at least 2 high level policy briefs developed; and
- Blogs, media outputs, social media, and press releases published in place.

7.9 A REGIONAL BIOECONOMY FORUM.

The project will, in close consultation with the BioInnovate Secretariat establish a regional and multidisciplinary Bioeconomy forum and platform, possibly linked to the BioInnovate Webpage for generating knowledge and insights that could assist countries to formulate and implement strategies and policies in support of Bioeconomy development. The forum will be an informal network to foster strategic dialogue with policy makers, private sector, civil society and scientists throughout the region inspired by the approach taken by the Global Bioeconomy Summit (GBS) in Berlin in 2015 and 2018 and resulting GBS Communiqués.

The BioInnovate webpage will be used for sharing knowledge and insights, not least through, policy briefs, blogs etc that could assist countries in formulating national strategies. The platform will be an avenue for publish a number of special reports and briefs on the Bioeconomy that possibly will be published in the East Africa Journal of Science, Technology and Innovation. The project will, potentially in collaboration with the BioInnovate Secretariat organise the regional Bioeconomy workshop and ministerial conference with exhibition, innovation-led Bioeconomy forum awards and facilitate the collaboration between academia, private and public sector. The draft Bioeconomy vision and strategies will be presented in national and regional fora including workshops, but also on-line consultations and presentations in specific

fora (such as parliamentary commissions, regional meetings/fora) ensuring a broad consultation and dialogue process.

Outputs

- A regional Bioeconomy forum and network in place,
- A regional Bioeconomy workshop and ministerial conference held, and
- Bioeconomy online platform in place

8.0 FLOW DIAGRAM AND DESCRIPTION OF THE DRAFTING PROCESS

Following the BiSEA project overall objective, the following diagram shows the process that will be followed to support the work of the Regional Strategy Drafting Group (RSDG) to develop a regional innovation driven Bioeconomy strategy and a policy in the eastern Africa region. After the inception meeting of the BiSEA project, the process will firstly aim at the selection of members by country to integrate the National Writing Groups (NWG). These groups at the same time will select two participants per country to integrate the Regional Drafting Group (RDG).

The work of the NWG will be to hold consultations at National level to include information for the drafting of the Strategy. These consultations will also provide information to the participants based on the studies and case studies conduct by the partners of the BiSEA project. The Regional Groups will use this information to prepare the drafts of the Regional Strategy.

These drafts will have three versions according to the different stages of consultation. The first draft will be considered the Zero draft to allow the National Groups to discuss it with the consultations, while the First draft will be prepared after the first series of national consultations and additional studies performed by BiSEA.

After this a First Draft will be prepare by the RDG. This First Draft will be used for Regional Consultation to receive feedback. After addressing the comments and feedback of the Regional Consultation, the Second and final Draft will be prepared to be submitted to the Countries in the East Africa Region to follow the legal process to be adopted. This last stage is not considered within the boundaries of the BiSEA Project. The whole process will take place from February 2019 to November 2019.

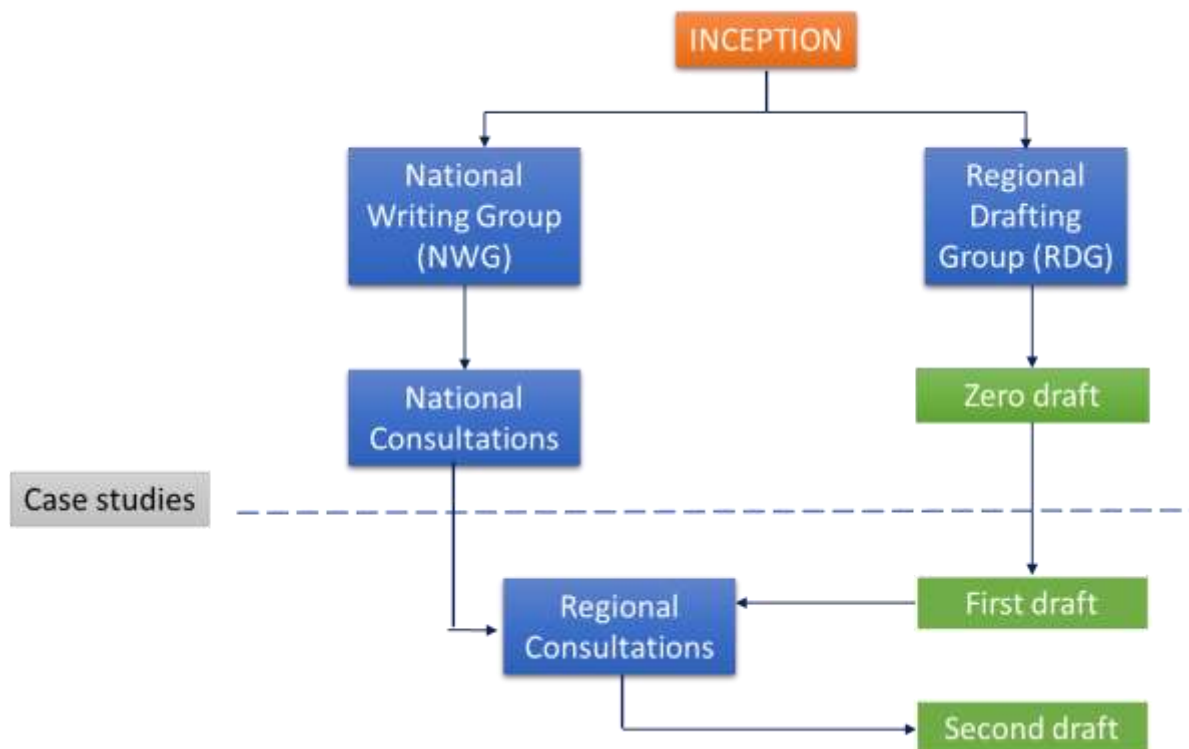


Figure 4 Flow diagram and description of the Bioeconomy Strategy drafting process

9.0 INITIAL STAKEHOLDER ANALYSIS

Stakeholder analysis will include the categorization of all the actors in relation to their mandates and interests in order to assess how their interests can be addressed within the Bioeconomy strategy. Data will then be presented and synthesized as a prerequisite for the formulation of the Bioeconomy strategy (**Annex 1**).

The project will analyse the stakeholder in order to support the BiSEA partners in identifying the interests of all stakeholders, who may affect or be affected by the assignment, identify the Potential issues that could disrupt the BiSEA Strategy, communication planning & stakeholder management during development of BiSEA, find the ways to reduce potential negative impacts & manage negative stakeholder and engaging stakeholders throughout the strategy development process. To prioritise stakeholders, we shall consider their power and interest each stakeholder has in the Bioeconomy. We offer here the definitions of power and interest for clear guidance.

10.0 OVERVIEW OF BIOECONOMY POLICIES & RELATED STRATEGIES IN THE REGION

While there does not exist a dedicated Bioeconomy framework in any of the eastern African countries, there do exist related frameworks, plans and strategies, whether that be policies relating to the biomass producing areas, or those supporting trade and innovation in the Bioeconomy, or science, technology and innovation, or overall national development. In this section, we present the overarching policies, institutions, legislations, plans and strategies with regard to the production, processing and use of biomass in the participating countries of the BiSEA project. We highlight these frameworks in the context of core thematic areas of the Bioeconomy where there is largely biomass production i.e. agriculture, forestry, the blue economy (fishing and aquaculture) and the green economy, as well as the thematic areas of the Bioeconomy where we find processing and use of biomass i.e. including bioenergy. In addition, we highlight the supporting thematic areas of the Bioeconomy including the national development strategies, industry and trade (local & international), manufacture of food, beverages and tobacco, manufacture of bio-based textiles, manufacture of wood products and furniture, manufacture of bio-based chemicals, pharmaceuticals, plastics and rubber, Bioeconomy research and development, education and human resource management for the Bioeconomy. These frameworks are analysed in relation to their objectives, scope, and strategies in responding to the Bioeconomy needs and potential of the region. A detailed analysis will be provided in future reports as a build up to the present one.

Burundi:

In Burundi, the Ministry of Agriculture and Livestock offers institutional support for the National Agriculture Strategy (Stratégie Agricole Nationale (SAN)³) (ran through 2008-2015), Programme National de Sécurité Alimentaire (PNSA)⁴ (ran through 2009-2015), and the Stratégie Nationale et Plan d'Action sur la Biodiversité (2013-2020)⁵. The Ministry of Water, Environment, Regional Development and Urbanisation (Ministère de l'Eau, de l'Environnement, de l'Aménagement du Territoire et de l'Urbanisme (MEEATU)) oversees the Stratégie Nationale et Plan d'Action sur la Biodiversité (2013-2020), the National Strategy and Action Plan for Access to Genetic Resources in Burundi (2016)⁶, among other plans. With a forest cover of **10.93%**, the country has developed codes and laws for plant protection. Bioenergy is a key biomass consumption industry, with wood and lignocellulosic products accounting for more than **97%** of the energy balance in the Great Lakes sub region (CEPGL), according to the 2011 Energy Policy Ministerial Letter⁷. The blue economy (fishing

³ [République du Burundi, 2008, Stratégie Agricole Nationale \(2008-2015\)](#)

⁴ [République du Burundi, 2009, Programme National de Sécurité Alimentaire \(PNSA\) \(2009-2015\)](#)

⁵ [République du Burundi, 2013, Stratégie Nationale et Plan d'Action sur la Biodiversité \(2013-2020\)](#)

⁶ [République du Burundi, 2016, Stratégie Nationale et Plan d'Action en matière d'accès aux ressources génétiques et de partage des avantages découlant de leur utilisation au Burundi](#)

⁷ [République du Burundi, Ministère de l'énergie et des mines direction générale de l'énergie et de l'eau, lettre de politique énergétique](#)

and aquaculture) is regulated by the Law No 1/17 of 30 November 2016 on Organisation of Fisheries and Aquaculture in Burundi. There are equally guidelines aimed at ensuring the sustainability of small-scale fisheries in the context of food security and poverty eradication.

In this analysis, environmental considerations for the Bioeconomy are within the green economy, where the economy operates with improved human and social equity, while reducing environmental and ecological scarcities. Burundi has enacted in 2000 the Environmental Code and has ratified in 2005 the Stockholm Convention on persistent organic pollutants.

While there is no dedicated policy framework on biotechnology, a Bioeconomy knowledge based high technology sector, biotechnology is still actively practiced through institutions such as the Institut des Sciences Agronomiques du Burundi (ISABU) through programmes such as the Plant Production Programme (PPV). There is an ongoing project to have biosecurity laws in the country. Local and international trade are overseen through the Ministry of Commerce, Industry, Posts and Tourism, which has specific regulations on the manufacture and production of bio-based products. The Burundian Investment Code (2009) protects all intellectual property such as patents, copyrights and trademarks.

Ethiopia:

The development of agro-industries presents Ethiopia with an opportunity to accelerate economic development and achieve its industrial development goals, as agriculture supports **86%** of the Ethiopian population. This is according to the Ethiopian Industrial Development Strategic Plan (2013-2025)⁸ which leverages on the private sector as the engine for industrial development, focus on labour intensive industries to exploit comparative advantage, champion an agricultural led industrialization to create the linkages for sustained transformation. While the first phase of this strategy (2013-2015) was focused on enhancing the productivity of major industries, the second phase (2016-2020) is set to diversify and support the emergence of new key industries. The third phase (2021 -2025) will focus on building up high-tech industries. This strategy is also supported by other Bioeconomy related strategies including the National Strategy for Pharmaceutical Manufacturing Development (2015-2025)⁹. This strategy prioritises the sectors: textiles and garments; leather & leather products; agro –processing; chemical and pharmaceutical products; metals and engineering; electronic products; petro –chemicals; biotechnology; and, packaging.

Supporting institutions include the Ethiopian Agricultural Research Organisation (EARO), the Institute of Biodiversity Conservation. The Ethiopian Biotechnology Institute (EBT) has also sent out the nation's first biotechnology policy to the Ministry of Science & Technology (MOST). The Ethiopian National STI Policy was first approved in 1993, and was then revised and approved in 2012.

Kenya:

Like other eastern African economies, agriculture is the backbone of Kenya's economy, contributing up to 25% of the nation's GDP. The Ministry of Agriculture, Livestock, Fisheries and Irrigation through the State Department for Agricultural Research, State Department for Fisheries, Aquaculture and the Blue Economy, and the State Department for Irrigation oversees a number of frameworks in the agricultural sector and associated industries. Some of these frameworks include the 2006 National Biotechnology and Development Policy that covers all biotechnology applications, including tissue culture and micro propagation, biopesticides and biofertilizers, livestock technology, DNA Marker technology, and genetic engineering. It also covers research, development and use of biotechnology in various key fields such as agriculture, environment, human and animal health and industry. In addition to these are: the 2005 National Potato

⁸ [Federal Democratic Republic of Ethiopia, 2013, Ministry of Industry, Ethiopian Industrial Development Strategic Plan \(2013-2025\)](#)

⁹ [Federal Democratic Republic of Ethiopia, 2015, Ministry of Health and Ministry of Industry, National strategy and plan of action for pharmaceutical manufacturing development in Ethiopia \(2015–2025\)](#)

Industry Policy, the 2006 Dairy Development Policy, the 2007/8 Nut Crops Development Policy and Bill, among others.

The country is in the process of developing a National Biosciences Bill which will govern the entire Biosciences sub sector including Biosecurity, Bioeconomy, Biomedical, Bioinformatics and other related life sciences. This is within the mandate and context provided in the Kenya Vision 2030, the national development strategy that aims to transform Kenya into a newly industrializing, middle-income country providing a high quality of life to all its citizens by 2030 in a clean and secure environment. In the same context a National Products Policy and Bill will be formulated that will create an institutional set-up that will serve as the primary custodian of the natural products industry by strategically promoting, directing and coordinating all the activities of the multiple and diverse players in the knowledge and product value chain (Kenya Vision 2030)¹⁰.

On industry and trade, the 2006 National Biotechnology and Development Policy has established as priority areas to develop initiatives that will attract major investment in biotechnology research and product development from local and international companies or institutions; promote industrial skills development; provide a conducive environment for small and medium size biotechnology products businesses; and ensure high quality standards, competitiveness of products on local and international markets. The Ministry of Industry, Trade and Cooperatives is currently the focal point of the Manufacturing Pillar of the Government's Big 4 Agenda¹¹ that seeks to ensure 15% of GDP is from the manufacturing sector. This shall be achieved through agro-processing, textile, apparels and leather, as two key channels. Agro-processing shall be achieved through: local value addition for tea, coffee, meat, dairy, fruits, nuts and oils; warehousing and cold chain sites; and, aquaculture, fish feed mills and fish processing industries. The government equally commits to revive the cotton processing and ginning industries and setting up tanneries, leather products and apparel manufacturing within existing and planned Special Economic Zones (SEZs). Institutions in support of Bioeconomy development in the country include: the Kenya Agricultural and Livestock Research Organization (KALRO), International Livestock Research Institute (ILRI). The National Commission for Science Technology and Innovation (NACOSTI), the Kenya National Innovation Agency (KENIA) and the National Research Fund (NRF) were enacted through the 2013 National STI Act. The Industrial Property Act 2001 governs the industrial and intellectual property rights.

Rwanda

As a biomass production sector, agriculture is equally the backbone of Rwanda's economy. The Ministry of Agriculture (MINAGRI) is mandated to implement agriculture related policies through sectoral policy setting, sectoral strategy planning; sectoral M&E; and sectoral capacity building. The Rwandan 2017 National Agriculture Policy¹² therefore has as key policy actions to: increase crop, livestock, fisheries and aquaculture productivity; promote high-value addition for Rwandan agriculture; foster active policy response to and fragmentation, by furthering producer cooperation and land leasing; encourage better post-harvest management, while also actively supporting the emergence of agri-food processing; improve farmers' access to markets, particularly through better value chain integration; among others. The institutional frameworks for the implementation of these policies and strategies also include: the Rwanda Agriculture Board (RAB), National Agricultural Export Development Board (NAEB); the National Agricultural Export Development Board; and the Rwanda Agriculture Board.

In 2011, Rwanda also enacted a biodiversity policy¹³, is a signatory and has ratified several international treaties and conventions promoting biodiversity conservation. Amongst these is the Convention on Biological

¹⁰ Kenya Vision 2030, Science, Technology and Innovation – Policy, Legal and Institutional Reforms

¹¹ Kenya Big 4 Agenda, Office of the President, <https://big4.president.go.ke>

¹² Republic of Rwanda, 2017, Ministry of Agriculture and Animal Resources, National Agriculture Policy

¹³ Republic of Rwanda, 2011, Ministry of Natural Resources, Rwanda Biodiversity Policy

Diversity (CBD), with three main goals including the conservation of biodiversity, sustainable use of the components of biodiversity, and sharing the benefits arising from the commercial and other utilization of genetic resources in a fair and equitable way. Its biodiversity policy recognises the role of the biodiversity and biomass in helping the country achieve its long term developmental goals expressed in its strategic Vision 2020.

Rwanda's main energy source is biomass mainly from farm and plantation trees. The country's 2018 National Forestry Policy¹⁴ adopts seven (7) statements involving the enhancement of the capacities of forest institution and actors for sustainable forest management, increase of private sector support and involvement in the forestry sector, enhancement of biodiversity and ecosystem services for efficient biomass supply, as well as the adoption of Agroforestry and Trees Outside Forest (TOFo) techniques to enhance forest resources and agriculture productivity. Rwanda has also ratified the Convention on Biological Diversity (CBD) and has developed a National Biodiversity Strategy and Action Plan (NBSAP). With regard to bioenergy, Rwanda has developed a national Biomass Energy Strategy (BEST)¹⁵ with a particular focus on improvements to the charcoal supply chain.

To support industry and innovation, and in support to other industry and trade related activities in the country, with the support of the African Development Bank (AfDB) Rwanda launched its National Research and Innovation Fund (NRIF) with \$30m in support of various innovation projects including the SMEs.

Tanzania:

Tanzania enacted the National Forest Policy (1998)¹⁶ and the Forest Act (2002)¹⁷, with the policy's overall goal to enhance the contribution of the forest sector to the sustainable development of Tanzania and the conservation and management of her natural resources for the benefit of present and future generations. The policy touches on forest land management, forest-based industry products & trade, ecosystem conservation and management and institutional and human resources. It seeks to ensure sustainable supply of forest products and services by maintaining sufficient forest area under effective management. Tanzania has the highest forest cover in the region (**51.58%** as in 2017).

The country's National Agricultural Policy (2013)¹⁸, revised from the Agriculture and Livestock Policy (1997) equally targets a range of key and cross-cutting policy areas and seeks to enhance the development and application of agricultural biotechnologies that address national priorities shall be promoted in line with the National Biotechnology Policy (2010)¹⁹ and Bio-safety Framework for the implementation of the Cartagena Protocol on Biosafety, among other objectives. This policy is enacted through the institutional support of the Ministry of Agriculture, Food Security and Cooperatives, among other institutions.

Solid bioenergy still accounts for 90% of total energy consumed in Tanzania, while modern commercial energy contribution is as follows: petroleum seven (7) %, electricity 1.4% (Energy Policy 2003)²⁰. This policy intends to promote efficient conversion and use of bio-energy to reduce land degradation, deforestation and mitigate climate change. Only recently has Tanzania initiated efforts towards a liquid bioenergy policy, regulatory framework and guidelines for sustainable liquid biofuels development through a National Biofuels Task Force.

¹⁴ Republic of Rwanda, 2018, Ministry of Lands and Forestry, Rwanda National Forestry Policy

¹⁵ Republic of Rwanda, 2009, Ministry of Infrastructure of Rwanda, the EUEI Partnership Dialogue Facility

¹⁶ Government of the United Republic of Tanzania, 1998, National Forestry Policy

¹⁷ Government of the United Republic of Tanzania, 2002, Forest Act No. 7 of 2002

¹⁸ [Government of the United Republic of Tanzania, 2013, Ministry of Agriculture Food Security and Cooperatives, National Agriculture Policy](#)

¹⁹ [Government of the United Republic of Tanzania, 2010, Ministry of Communication, Science and Technology, National Biotechnology Policy](#)

²⁰ [Government of the United Republic of Tanzania, 2003, Ministry of Energy and Minerals, The National Energy Policy](#)

The National Biotechnology Policy (2010) recognises that the conservation and utilisation of plant, animal and microorganism genetic resources is of great economic importance and recognise that the need to sustainably conserve and utilize the national genetic resources is important and urgent. The Tanzania Development Vision (TDV) 2025 targets high quality livelihood, good governance and the rule of law, and a strong and competitive economy.

Laws governing IP Rights include the Copyright and Neighbouring Rights Act (2006), Copyrights and Neighbouring Right Regulations (2006), Patents Act (1993), Patents (Amendment) Act (2002), Patent Regulations, Trademarks Act (2010), Trade Secrets Protection Act, 2009, Industrial Property Act 2004, The National Environment Regulations, 2005(Access to Genetic Resources and Benefit Sharing).

Uganda:

The Bioeconomy in Uganda is argued to be supported mainly by the areas of bioenergy and biotechnology. The Biomass Energy Strategy (BEST) Uganda (2013)²¹ proposes rational and implementable approaches to manage the biomass energy sector. In the long-term development strategy “Vision 2040”²², which aims at transforming Uganda from a predominantly peasant and low income country to a competitive upper middle income country, the government also highlights the importance of a sustainable supply of biomass.

The Constitution of Uganda (1995) as amended (2006), obligates government to, “promote and implement energy policies that will ensure that people’s basic needs and those of environmental preservation are met.” BEST as supported by the Ministry of Energy and Mineral Development, builds up from the government’s Renewable Energy Policy for Uganda (2007)²³ that lays out specific modalities for the development and production of biofuels, and highlights the role and importance of incentives for growing energy crops, recognizing that biomass, which supplies over 90% of the country’s energy requirements, has continued to be used in its traditional form..

After Kenya, Uganda has the second lowest forest cover in the region, **(9.68%)**. Among other roles, the National Forest Authority (NFA) is mandated to integrate biomass energy production and efficient utilization and its impacts on climate and health into the formal education system, as well as promote, in collaboration with NFA and the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), the growing of energy crops.

The country’s agricultural sector, a key biomass producer, the country has enacted the National Agriculture Policy (NAP) (2013)²⁴, although there is no mention of biomass in this policy. The value of agricultural exports stood at 72.9% of total exports in the financial year 2016/1725. The Agriculture Sector Strategic Plan (ASSP) (2015-2020)²⁶ targets sector investment in specified priority and strategic commodities (banana, beans, maize, rice, cassava, irish potatoes, tea, coffee, dairy, and fish among others) across their entire value chains and focus on research, market access and value addition. There are no intellectual property policies yet but there are a number of institutions engaged in IP issues such as Tanzania Intellectual Property Rights Network

²¹ Government of Uganda, Ministry of Energy and Mineral Development (MEMD), 2013, Biomass Energy Strategy (BEST)

²² [Government of Uganda, 2007, Office of the Prime Minister, Vision 2040](#)

²³ Government of Uganda, 2007, Ministry of Energy and Mineral Development, Renewable Energy Policy for Uganda

²⁴ Republic of Uganda, 2013, Ministry of Agriculture, Animal Industry and Fisheries, National Agriculture Policy

²⁵ <http://agriculture.go.ug/sector-overview-2/>

²⁶ <http://agriculture.go.ug/agriculture-sector-strategic-plan-assp/>

11.0 PROPOSED STRUCTURE/ CONTENT OF THE BIOECONOMY STRATEGY

The following is the proposed structure of the Regional Innovation-led Bioeconomy strategy for Eastern Africa.

- i. Executive Summary
- ii. Background
 - a. Understanding of Bioeconomy in the Eastern Africa region (Definitions, from global to African to EA perspectives)
 - b. Summary of the status of the Bioeconomy in the region
 - c. Key challenges and opportunities (general outlook)
 - d. Scope- i). Functional - production, processing and use of biomass (embedded here is R&I) ii) Geographical iii). Sustainability – environmental, socio-economic
- iii. Value proposition for a Bioeconomy Strategy in Eastern Africa (remember to include: economic contribution as a key driver)
 - a. Linking with (trade and integration into) global value chains
 - b. Employment into wealth/job creation
 - c. Local & FDI
 - d. Low carbon economy...circular economies
 - e. Stimulate development of national Bioeconomy visions/strategies/policies
 - f. Promote sustainability and link it with the Global Goals (SDGs)
- iv. Vision, Mission and Objectives of the strategy
- v. Key priorities areas for a Bioeconomy in the region (avoid sectorilisation of these priorities but instead adapt the biomass value pyramid visualizing the cascading principle) –the technology capacity of this principle?
- vi. Enablers for a Bioeconomy Strategy in Eastern Africa
 - a. Policies
 - b. Funding
 - c. Capacity – endogenous and exogenous
 - i. Creating an enabling environment e.g. biotechnology regulations
 - d. Integration – models that will enable regional integration. E.g. free trade agreements and public policies in the
 - e. Linkages
- vii. Key opportunities for a Bioeconomy development in the region (of empirically identified priority areas, giving rationale for intervention.)
- viii. Actions and intervention plans for a sustainable regional Bioeconomy development in EA

12.0 WORK PLAN (COMBINED GANTT CHART)

PARTNER	ACTIVITY/OUTPUTS	DEC '18	JAN '19	FEB '19	MAR '19	APR '19	MAY '19	JUN '19	JUL '19	AUG '19	SEP '19	OCT '19	NOV '19	DEC '19
KEY MILESTONE	PLANNING MEETING (17TH - 18TH JAN 2019)													
EASTEKO	Activity 1.1: Project Team meeting to review and agree on work plan for the project, develop inception reports and plan for stakeholders' inception meeting.													
EASTEKO	Activity 9.1 Purchase of project equipment's (recorder, laptop and projector) to assist in carryout studies and stakeholders workshops and meetings in different Bioeconomy fora and platforms													
EASTEKO	Activity 9.2 Subscription to Journals for reference materials for the studies.													
BCL	Activity 9.1: Purchase of project equipment's (recorder, laptop and projector) to assist in carryout studies and stakeholders workshops and meetings in different Bioeconomy fora and platforms													
BCL	Activity 9.2: Subscription to Journals for reference materials for the studies													
SCINNOVENT	Activity 9.1: Purchase of project equipment's (recorder, laptop and projector) to assist in carryout studies and stakeholders workshops and meetings in different Bioeconomy fora and platforms													
SCINNOVENT	Activity 9.2: Subscription to Journals for reference materials for the studies.													
SEI	Activity 9.1: Purchase of project equipment's (recorder, laptop and projector) to assist in carryout studies and stakeholders workshops and meetings in different Bioeconomy fora and platforms													
SEI	Activity 9.2: Subscription to Journals for reference materials for the studies.													

PARTNER	ACTIVITY/OUTPUTS	DEC '18	JAN '19	FEB '19	MAR '19	APR '19	MAY '19	JUN '19	JUL '19	AUG '19	SEP '19	OCT '19	NOV '19	DEC '19
ATPS	Activity 9.1: Purchase of project equipment's (recorder, laptop and projector) to assist in carryout studies and stakeholders workshops and meetings in different Bioeconomy fora and platforms													
ATPS	Activity 9.2: Subscription to Journals for reference materials for the studies.													
ATPS	Activity 2.1: In-depth Bioeconomy related policies and regulatory framework in the participating countries (Policy Analysis Methodolody)													
BCL	Activity 2.2: First draft of stakeholder analysis report													
SEI	Activity 3.1: In-depth assessment and empirical studies (Methodology)													
ATPS	Activity 4.1: Scenarios and suggestion pathways for bio-based growth in the region (Foresight and Scenarios Methodology)													
KEY MILESTONE	DRAFT INCEPTION REPORT (1ST FEB 2019)													
KEY MILESTONE	INCEPTION MEETING (28th FEB - 1st MAR 2019)													
EASTEKO	Activity 1.2: BiSEA Inception meeting to introduce the project to stakeholders.													
EASTEKO	Activity 1.4: Establish and organise the National working groups meetings.													
KEY MILESTONE	INCEPTION REPORT (8TH MAR 2019)													
KEY MILESTONE	FIRST NATIONAL CONSULTATION MEETINGS (25TH - 29TH MARCH 2019)													
KEY MILESTONE	FIRST RDG MEETING (11TH APRIL 2019)													
ATPS	Activity 2.1: First draft of status report on Bioeconomy related policies and institutions													

PARTNER	ACTIVITY/OUTPUTS	DEC '18	JAN '19	FEB '19	MAR '19	APR '19	MAY '19	JUN '19	JUL '19	AUG '19	SEP '19	OCT '19	NOV '19	DEC '19
ATPS	Activity 2.1: A report/on Bioeconomy related policies, regulatory framework, governance structure, government and other initiatives in the region to be directly integrated into the strategy													
BCL	Activity 2.2: Comprehensive stakeholders' analysis													
ATPS + SCINNOVENT + BCL	Activity 4.0: Design the tools and apply foresight studies and scenarios building in STI and Bioeconomy development to benchmark existing capacities against future requirements to guide Bioeconomy development strategies in the region.													
SEI	Activity 3.1: Compiling a report of Bioeconomy strategies and the opportunities and challenges in other parts of the world													
SEI	Activity 3.2: Identifying key factors for the creation of an enabling environment in support of a bio-based economy that needs to be addressed in the strategy.													
SEI	Activity 3.3: Environmental assessments of identifying benefits and potential environmental risks in the development of east African bioeconomies													
ATPS	Activity 4.1: Foresight and Scenarios exercises at national levels on future potential, opportunities for bio-based economic growth in the region.													
SCINNOVENT	Activity 4.2 Establish Innovation Bioeconomy research and development (R&D) priorities to guide government investments in STI													
BCL	Activity 4.3: Studies on Bioeconomy existing capacities, future potential opportunities for bio-based economic growth and Bioeconomy pathways in the region.													
BCL	Activity 5.3: Private sector facilitation to national/regional consultation meetings													
KEY MILESTONE	DRAFT STUDY REPORTS (30TH JUL 2019)													

PARTNER	ACTIVITY/OUTPUTS	DEC '18	JAN '19	FEB '19	MAR '19	APR '19	MAY '19	JUN '19	JUL '19	AUG '19	SEP '19	OCT '19	NOV '19	DEC '19
KEY MILESTONE	INTERIM REPORT + 1ST DRAFT STRATEGY (18TH SEP 2019)													
KEY MILESTONE	1ST REGIONAL MEETING (2ND-3RD OCT 2019)													
EASTEKO	Activity 5.1: Convene stakeholders' workshop to discuss and validate the Bioeconomy study reports.													
SEI	Activity 6.1-6.3: Drafting the regional innovation-led Bioeconomy Strategy, organising two drafting meetings, acting as secretariat to the Drafting Committee and developing a first draft of a regional strategy.													
EASTEKO	Activity 1.3: Project Coordination and Management													

13.0 PROJECT MANAGEMENT AND COORDINATION

13.1 MANAGEMENT OF THE CONSORTIUM AND THE DRAFTING PROCESS

EASTECO will coordinate the project team and all management activities with the support of the partners. These activities will include: organization of internal and external meetings, production of minutes, and contact with key stakeholders, reporting to Bioinnovate PMO, and the financial management of the project.

The commissioning of fact finding, studies and empirical work highly need driven and will be decided by the Regional Strategy Drafting Committee and the BiSEA project team jointly on the basis of what is needed to move the drafting process forward. How to divide these tasks will be a collective decision and agreement within the BiSEA team and will be based on the capacity to deliver required facts, studies and empirical work into drafting process and ensure a high quality of work and sufficient speediness. EASTECO will also have the final responsibility to ensure that requested knowledge, requested by the Regional Strategy Drafting Committee will be delivered in a timely manner, and with sufficient quality. EASTECO depending on the type of information needed in the drafting process will also be able to contract local expertise, resource persons/consultants and academia outside the BiSEA team to gather data and do empirical work as requested by the Regional Strategy Drafting Committee.

In order to ensure a flexible in arranging the empirical work, a rapid response fund will be developed as part of the BiSEA overall budget. The fund will be managed by EASTECO who will, in agreement with the BiSEA team, disburse fund for agreed work according to annual plans and input form the Bioinnovate secretariat.

13.2 MONITORING, EVALUATION AND QUALITY ASSURANCE

EASTECO will ensure the signature and monitoring of the project team agreement and will seek compliance with all activities in the project. EASTECO will prepare a monitoring and evaluation plan to ensure the overall management of the project deliverables and mitigate any risks within the project implementation. EASTECO will also set up a Quality Assurance system to promote the quality of all project deliverables. This will entail internal and external reviews of the deliverables

13.3 THE DEVELOPMENT OF AN INTERNATIONAL PROJECT REFERENCE GROUP

In order to ensure high quality in the drafting process and also in evaluating the quality of data and empirical work used in the drafting process, the BiSEA team will develop an international reference group of tentatively 10 experts, covering different aspects of the expertise needed. This group will consist of experts who can provide input top the process, evaluate components of, and knowledge fed into the drafting process. From time to time, these group could be called in for virtual on line meetings, but representative of the group could also be supported to be part of regional meetings. The selection of this reference group would be the joint responsibility of the BiSEA team.

13.4 COMMUNICATION STRATEGY.

EASTECO with support of the project team will prepare and coordinate the communications strategy for the project. This will refer to both internal and external communication. The communications strategy will identify relevant target groups with a focus on policy makers and key stakeholder in the countries and in the region and the most effective means to reach these groups. This strategy will be developed in close collaboration with the Bioinnovate communication team at ICIPE.

13.5 NATIONAL WORKING GROUPS AND THE REGIONAL DRAFTING TEAM

EASTECO will be the main contact and coordinator of the National Working Groups and the Regional Drafting Team. EASTECO will prepare an inception document on the functions of the National Working Groups and the Regional Drafting Team Coordinating national and regional workshops. EASTECO will coordinate the national and regional workshops with support from the team, the National Working Groups and the Regional Drafting Team.

ANNEX I: PRELIMINARY STAKEHOLDER ANALYSIS

Categories of Stakeholder Relevant to the Development of the Bioeconomy strategy	Stakeholder	Stakeholder's role	Level of Power (resources or influence) over regional Bioeconomy strategy	Level of Interest in the Bioeconomy strategy	Contact
National governments, agencies, and National commissions	Ministry of science technology and innovation-Uganda	Grant management Research management, registration and oversight, science and technology policy development Promotion and system monitoring	H	M	Lumumba Avenue, Rume Building P.O BOX 7466 KAMPALA Tel: +256(0)4147888200 info@mosti.go.ug https://mosti.go.ug/index.php/about-us
	Uganda National Council for Science and Technology	Provide over all Policy Guidance and Coordination for scientific research, development and the whole National Innovation System in Uganda.	H	M	Plot6, Kimera Road Ntinda P.O BOX 6884, Kampala Uganda info@uncst.go.ug +256414705500 +256 4147888200
	Uganda Industrial Research Institute	Identify and/or develop appropriate technologies and processes for the exploitation of our nation's natural resources.	H	H	Information on this organization is only available at the ministry of trade industry and development website http://www.mtic.go.ug/index.php?option=com_content&view=article&id=34&Itemid=388
	Kenya industrial research institute	Undertaking multidisciplinary research and development in industrial and allied technologies. They also provide incubation, consultancy and training services as well as management of pilot processing plants	H	H	South C Campus - Popo Rd. Off Mombasa Rd. P.O. Box 30650-00100. Nairobi, Kenya. Tel: +254-20-6003842 E-mail: dir@kirdi.go.ke

Categories of Stakeholder Relevant to the Development of the Bioeconomy strategy	Stakeholder	Stakeholder's role	Level of Power (resources or influence) over regional Bioeconomy strategy	Level of Interest in the Bioeconomy strategy	Contact
	Kenya National Council for Science and Technology	Responsible for regulating and assuring quality in the science, technology and innovation sectors as well as advising the Government in these matters	H	M	National Commission for Science Technology and Innovation off Waiyaki Way, Upper Kabete, P. O. Box 30623, 00100 Nairobi, KENYA Mobile: 0713 788 787 / 0735 404 245 E-mail: info@nacosti.go.ke https://www.nacosti.go.ke/index.php/about-us/mandate-functions
	Tanzania Commission for Science and Technology	It is a parastatal organization with the responsibility of coordinating and promoting research and technology development activities in the country. It is the chief advisor to the government on all matters pertaining to science and technology and their application to the social economic development of the country.	H	M	P.O BOX 4302, Ali Hassan Mwinyi Road, Kijitonyama(sayansi) COSTECH Building Dar es Salaam, Tanzania. Phone:+255222774023 Email: dg@costech.or.tz http://www.costech.or.tz/?page_id=1593
	National Commission for Science, Technology and Research (CNSTR)- Burundi	To contribute to social economic development of Burundians by coordinating science technology, innovation and research	H	M	Boulevard de l'Uprona B.P. 1990 BUJUMBURA, Burundi Tel: (257) 22 22 4517/ (257) 68 74 60 85 OR (257) 79 00 52 04 E-mail nceline100@yahoo.fr

Categories of Stakeholder Relevant to the Development of the Bioeconomy strategy	Stakeholder	Stakeholder's role	Level of Power (resources or influence) over regional Bioeconomy strategy	Level of Interest in the Bioeconomy strategy	Contact
	National commission of science and technology(NCST) Rwanda	To advise the Government on policies, legislation and regulation in the fields of science, technology, research and innovation and monitor the implementation of such policies and legislation	H	M	13th Floor, Grand Pension Plaza KN 2 Avenue, Nyarugenge - Kigali - Rwanda P.O. Box 2285 Kigali Email: info@ncst.gov.rw http://ncst.gov.rw/content/mission
	Ministry of science and technology-Ethiopia	Coordinating, encouraging and supporting science and technology activities that realize the country's social and economic development	H	H	http://www.most.gov.et/about-us email: info@MoST.gov.et
	East Africa Science and Technology Commission(EASTCO)	It is a semi-autonomous institution of the EAC that is mandated to promote cooperation in the development of Science & Technology within the Community			https://eastco.org/historical-background/ 2nd Floor Telecom House, Boulevard de l'Umuganda, Kacyiru 8 KG 7 Ave, KIGALI – RWANDA Phone: +250-788 310 402 Email: easteco@eachq.org
Funding agencies (grants, loans and equity investors)	Bioresources Innovations Network for East African Development(BIIONNOVATE)	The programme supports scientists and innovators in the region to link biological based research ideas and technologies to business and the market	H	H	BioInnovate Africa programme, International Centre of Insect Physiology and Ecology-icipe Duduville campus, Kasarani P.O BOX 30772-00100 Nairobi, Kenya Tel: +254-208632000/+254-20-8632433 Email: bio-innovate@icipe.org https://bioinnovate-africa.org/

Categories of Stakeholder Relevant to the Development of the Bioeconomy strategy	Stakeholder	Stakeholder's role	Level of Power (resources or influence) over regional Bioeconomy strategy	Level of Interest in the Bioeconomy strategy	Contact
	East African Development Bank	Promote sustainable socio-economic development in East Africa by providing development finance, support and advisory services	H	H	EADB Building, Plot 4 Nile Avenue P.O Box 7128, Kampala, tel: +256 417 112900/1/2; +256 312 230000 enquiry@eadb.org Http://eadb.org/about-us/
	African Academy of Sciences	Transforming lives through science by leverage resources through research excellence and thought leadership for sustainable development	H	H	8 Miotoni Lane, Karen P.O. Box 24916-00502 Nairobi, Kenya https://www.aasciences.ac.ke/about/about-us/endowment-fund/
	aBi Clean Technology Fund.	The Agriculture Business Initiative (aBi) a donor-funded and agriculture-focused entity in Uganda launched the Clean Technology Fund to finance sustainable land management initiatives, efficient energy solutions, the use of renewables, environmentally friendly waste management, efficient water use and soil moisture management, and other climate smart practice for the value chains it supports. Green business ideas completion that accelerates innovation to enable a low-carbon future	H	H	aBi UMOJA House, 2nd Floor Plot 20, Nakasero Road. P.O Box 29851, Kampala, Uganda Tel: +256 (0) 312 351600 Email: info@abi.co.ug www.abi.co.ug
	Climate Launchpad- Kenya Climate Innovation Centre		H	H	https://climatelaunchpad.org/

Categories of Stakeholder Relevant to the Development of the Bioeconomy strategy	Stakeholder	Stakeholder's role	Level of Power (resources or influence) over regional Bioeconomy strategy	Level of Interest in the Bioeconomy strategy	Contact
Research Institutes, Think Tanks and Academic Institutions	International Livestock Research Institute	Researches livestock production and health in order to sustain excellent productivity for profitability and reduced risk of livestock-related diseases.	M	H	P.O. Box 30709 Nairobi 00100, Kenya Phone: +254-20 422 3000 email: ILRI-Kenya@cgiar.org https://www.ilri.org/home
	East African Business Council	It is a regional apex body of Private Sector associations and corporates in the East Africa with a single purpose of driving the East African Community integration process through trade and investment.	M	M	http://eabc-online.com/aboutus/who-we-are East African business council-EABC Ninth floor, Mafao House, Old Moshi Road P.O BOX 2617 Arusha Tanzania +255272520162 or +255272520163 Email: info@eabc-online.com
	Busitema University	Research and academic institution	M	M	http://www.busitema.ac.ug/about-us/
	African technology policy studies network (ATPS)	It is a trans disciplinary network of researchers, policy makers, private sector actors and the civil society that promote the generation, dissemination, use and mastery of STI for African development, environmental sustainability and global inclusion.	M	H	8th Floor, The Chancery, Valley Rd., Nairobi, Kenya P.O Box 10081 00100 +254 020 2714092 info@atpsnet.org https://atpsnet.org/about-atps/

Categories of Stakeholder Relevant to the Development of the Bioeconomy strategy	Stakeholder	Stakeholder's role	Level of Power (resources or influence) over regional Bioeconomy strategy	Level of Interest in the Bioeconomy strategy	Contact
	The SCINNOVENT CENTRE	It is a policy and development research and training organization that works around the synergies between science, technology, innovation (STI) and entrepreneurship	M	H	The Scinnovent Centre Gate 123, Mountain View Estate, Off Waiyaki Way, Behind Total Petrol Station, P.O. Box 52486 - 00100, Nairobi Kenya Tel: +254 020 2173433 Email: bolo@scinnovent.org https://scinnovent.wordpress.com/
	Stockholm Environmental Institute	Connects science and decision-making to develop solutions for a sustainable future for all. They work on topics such as climate, water, air, and land-use issues, and integrates evidence and perspectives on governance, the economy, gender and human health	M	H	World Agroforestry Centre, United Nations Avenue, Gigiri, P.O. Box 30677, Nairobi, 00100, Kenya Tel: +254 (0) 711 034490 email: info-Africa@sei.org https://www.sei.org/about-sei/
	Makerere University departments	Teaching, research and innovations	M	H	https://www.mak.ac.ug/
	University of Nairobi	Teaching, research and innovations	M	H	http://www.uonbi.ac.ke/
	University of Rwanda	Teaching, research and innovations	M	H	https://ur.ac.rw/
	Univerisity of Dar es salaam	Teaching, research and innovations	M	H	https://www.udsm.ac.tz/
	University of Burundi	Teaching, research and innovations	M	H	http://www.ub.edu.bi/

Categories of Stakeholder Relevant to the Development of the Bioeconomy strategy	Stakeholder	Stakeholder's role	Level of Power (resources or influence) over regional Bioeconomy strategy	Level of Interest in the Bioeconomy strategy	Contact
Private companies	East African seeds Ltd	Seed production, R&D, and extension services to farmers	M	H	P.O. Box 45125-00100 G.P.O Dakar Road Industrial Area Nairobi Kenya Mob: +254 722 207 747 / +254 734 333 161 http://www.easeed.com/index.php
	Raintree Farms Ltd	A social enterprise focused on working with farmers to sustainably grow and process medicinal crops.	M	H	+256 779 082975 Email: cs@raintreefarms.com https://raintreefarms.com/contact-us/
	Kenya Biologics Ltd	Manufacture of bio insecticides, bio fungicides and bio-stimulants	M	H	Nyeri Road, Kambiti, A2, Thika, Kenya +254 717 297 023 https://www.kenyabiologics.com/
	East Africa Nutraceuticals Limited	They deal in grain processing and value addition	M	H	Likoni Road, Lusingeti Road No. 16 K.I.E. Godown, Nairobi, Kenya Mob:+254722856513
	Golden Bees LTD	It's a social business focused on providing a full-scale range of beekeeping products & services. They are leading transformation of the smallholder beekeepers across east Africa through honey and bee wax processing and looking into venom extraction	M	H	Plot 2456 Namuli Road Bukoto, PO Box 7264 Kampala, Uganda Mob: +256 752 484 225 Email: mugishab@goldenbeesltd.com
	Biofit Agritech enterprises Ltd	Generating high quality animal feeds from invasive water hyacinth on lake victoria.	M	H	P.O BOX 34313-00100 Nairobi Kenya. Mob: +254718799604 biofitagritec@yahoo.com http://biofit.co.ke/products/

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	Geosy Ltd	A commercial aquaculture farm based in Eastern Uganda which produces table-fish for sale to local and regional markets as well as fish feeds and fingerlings for own consumption and sale to local fish farms	M	H	Nalukolongo industrial area Kampala - Uganda Mob: +256-770-631-666 Email: director@geosy.com
	Kigali farms ltd	The company produces mushrooms, mushroom substrates and as well as provide expertise and training to farmers for increased mushroom productivity	M	H	http://www.kigalifarms.com/m-87-mission-vision.html Mob: +250(0)788382860 Email: info@kigalifarms.com
	Banana Investment Ltd	Producer of wine made from banana juice and has a waste water treatment facility and biogas system that has enhance the company's production capabilities and environmental impact	M	H	P.O. Box 10123, Arusha, Tanzania Email: banana@banana.co.tz Mob: +255(0)754224440 http://www.banana.co.tz/contact-us/

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	Afribana products ltd	AfriBanana Products (ABP) Ltd is an agribusiness innovation incubator for banana sector value chain development. The incubator aims at up-scaling innovations to improve entrepreneurial skills, marketing value chains with emphasis on capacity building for increased production, development of Small and Medium Enterprises (SME's), training in entrepreneurship and agribusiness at B.Sc. and M.Sc. levels, linking of research innovations to agribusiness, and marketing of banana and its value added products.	M	H	P.O BOX 664 Kokundeka Road, Biharwe T.C, Mbarara Uganda email: info@afribana.co.ug www.afribana.co.ug
	Tonnet Agro-Engineering Company Limited	offers Agro & Food processing machinery and equipments, agro-implements, spare parts and general fabrication	M	H	Plot 699 Gayaza road kyebando behind fish factory P.O BOX 35048, kampala Mob: +256312299176/+256774947160 Email: tonnetagro.info@gmail.com
	Hottiserve East Africa Limited	Its involved in development of new products and services which impact the economic and technological growth and sustainability of agricultural and staple food sector of the east African region	M	H	P.O. Box 892, Ruaraka 00618 Nairobi, Kenya Mob: +254733731826 info@hottiserve-ea.com http://www.hottiserve-ea.com/category/about-us/

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	Real IPM Kenya	Producers of biopesticides, bio fertilizers, traps and pheromones and seed treatment chemicals	M	H	https://realipm.com/ THE REAL IPM CO.(KENYA) LTD P.O BOX 4001-01002 MADARAKA, THIKA KENYA TEL:+254(0)725806086 EMAIL: INFO@REALIPM.COM
	SENAI Farm Supplies Limited	Undertaking research and providing services in plant, soil and water analysis including availing agro inputs and planting materials to farmers	M	H	P.O. Box 70, Nateete Kampala, Email: senai bioscience@gmail.com senai farm ltd@gmail.com Mob: +256772431983 Or +256751670041 http://senai bioscience.org/stone-and-hardscaping/
	MIMEA International Kenya Limited	Grows tissue culture bananas, flowers, passion fruits and eucalyptus hybrids	M	H	
	Lasting Solutions	Piloting use of novel enzymes from local bacterial isolates for eco-friendly processing	M	H	
	Guavay Company Limited	It is a premium organic fertilizer manufacturing company in Dar es Salaam. The company uses a huge fraction of poorly disposed organic waste from food markets and residential areas to produce and sell 100% quality solid organic fertilizer.	M	H	COSTECH-DTBi, 1st Floor Dar Es Salaam, Tanzania Tel: +255 654 415 656 Email: info@guavay.com http://www.guavay.com/

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	Kibwezi Agro Limited	Exporting fresh quality fruits and vegetables to Europe and Asia	M	H	3120 Muaani P.O BOX 131 90137 Kibwezi, Makueni County, Kenya Mob:+254726419773 Email: exports@kibweziagro.co.ke Http://www.kibweziagro.co.ke/aboutus.php
	Agrarian Systems Limited	Engaged in feed milling and agricultural extension for plant and animal science	M	H	Sir Albert Cook Road Wakaliga – Before Total Natete, VMK Plaza, 1st Floor mob: +256 312 112 691 / +256 772 495 309 email: info@agrariansystems.com / serob2002@yahoo.com
	Agri Seed Company Limited	The Company is involved in the breeding, multiplication and distribution of mainly hybrid seed varieties for the following crops: maize, wheat, soya beans, sugar beans, cowpeas, sorghum, groundnuts and vegetables	M	H	Mombasa Road (next to Mabati rolling Mills) P. O. Box 616 - 00621 Village Market, Nairobi Kenya Phone: +254 20 3228000 / 8046358 Email: kassim.owino@agriseed.co.ke http://www.seedcogroup.com/country/kenya

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	Sulma Foods Limited	Engages in the cultivation, processing, packing and exportation of Honey, fresh and dry fruits and vegetables. Sulma Foods is an agro-based company that is expanding its product portfolio from fresh raw produce to value-added horticulture and apiculture products for sale to the export and domestic market	M	H	Lwogi Bulema 10km Kasana Kikyusa Rd, Luwero district Kampala Central Region P.O Box 6046 Ka Uganda Mob:+256772502350
	OKOA Society NGO	Works with women, children and young people to be able to utilize the different resources that they have on their disposal	M	H	Mob: +255(0)654343834 Email: okoanewgeneration@gmail.com kariakoo sukuma st. Block 31 Nyamigo trading company ltd flor1 Dar es salaam,Tanzania http://www.okoanewgeneration.org/
	The Recycler Limited	Recycling collections, waste management, insect driven protein	M	H	Tel: +255 784 312 966 Email: matthew@recycler.co.tz or philipo@recycler.co.tz PO Box 80394 Dar es Salaam Tanzania http://www.recycler.co.tz/
	Karire Products	Beauty products from plant extracts	M	H	ACECI - Burundi Mugamba no 11 Rohero II – Bujumbura Email: info@aceci.org Tel: (+1) 418-524-7648: Canada (+257) 22277235: Burundi http://www.aceci.org/contact/

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	Gudie Leisure Farm	Organic farming solutions	M	H	Gudie leisure farm Najjera II, Kira town council P.O Box 27450 Kampala Tel: 256 77 2460865 glf@gudieleisurefarm.org https://gudieleisurefarm.org/
	Vector Health International Limited	R&D of products that contribute to improved human health and agricultural productivity	M	H	African technical research centre, vector health international ltd , p.o box 15500,Arusha Tanzania email: atrc@vectorhealth.com http://atrc.co/index.php/contact
	Soil and More Ethiopia Composting Plc	It is a for profit social enterprise in Ziway, Ethiopia that produces commercial quantities of compost using bi-products from local organic waste streams (mainly flower waste).			Kraanspoor 26 1033SE Amsterdam The Netherlands Tel:+31(0)880079500 Email: info@soilandmore.com https://www.soilandmore.com/
	The Women's Bakery Limited	Helps women open bakeries in their own communities	M	H	https://www.womensbakery.com/ The Women's Bakery, Inc. 1031 33rd Street, Suite 174 Denver, CO 80205
	Aroma Honey Toffee Limited	Making sweets from honey with zero processed sugar	M	H	https://web.facebook.com/aromahoneytoffee/?rdc=1&rd

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	Bio-Innovations Company Limited	Converts organic waste into a bio-renewable fuel for heating and cooking in institutional kilns	M	H	JB complex Nkizi Road wadegeya P.O BOX 73443 Kampala Mob:+256(0)779125508 Email: alex.t@bio-innovations-ug.org or alex.tumukunde@gmail.com
Incubators and accelerators	Renewable Energy Incubator Ltd	Nurtures renewable energy start-ups through provision of business development services to and piloting of new technologies with the aim of technology transfer	M	M	Second floor UMF house plot160 Sir Appolo Kaggwa road Makerere Kikoni P.O BOX 7062, Kampala-Uganda Mob: +256782358522/0704942320 Email: info@energyincubator.org
	SEED	Supports the growth of SMMEs that deliver social, environmental and economic returns in developing countries or countries with emerging economies ultimately contributing to local sustainable development.	M	M	https://www.seed.uno/about.html
	Growth Africa ltd	Accelerates African entrepreneurs and post revenue ventures in successful and impactful businesses	M	M	Lenana Towers, 5 th floor Lenana Road P.O BOX 17726-00100GPO Nairobi Kenya Tel:+254(0)724151924 Email: info@growthafrica.com https://growthafrica.com/

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	Yunus Social Business	Bringing technical experience and global knowledge required to run scalable and financially sustainable businesses, while centering their social ambitions.	M	M	Plot 52 Kanjokya street-Alisha Building Kampala Uganda Mob: +256392177026. Email: Uganda@yunusssb.com
Media	NTV Uganda and Kenya; RTV Rwanda; RTNB Burundi; TVT – Tanzania; EBC-Ethiopia	Media houses broadcasting Bioeconomy news and other economic programs	M	M	